EDP industry report

PUBLISHED BY INTERNATIONAL DATA CORPORATION, WALTHAM, MASS.

EDP industry report

● THE INTERNATIONAL DATA CORPORATION'S NEWSLETTER FOR EXECUTIVES CONCERNED WITH THE ELECTRONIC DATA PROCESSING INDUSTRY

"The Gray Sheet"

MOLLY UPTON, EDITOR MAY 11, 1981 ● VOL.16,NO.24 P.J. McGOVERN,PUBLISHER

XEROX, GENERAL ELECTRIC ASSEMBLE PIECES TO ATTACK INFORMATION ARENA -- AGAIN

"So, once burned in the computer room, Xerox may find its home ground in the upstairs offices fertile enough for the kind of growth it (had) gotten accustomed to . . . and the way to information processing through another door." -- EDP/IR, July 30, 1975.

'Once burned, twice shy' doesn't apply to Xerox and General Electric, which apparently cannot resist the powerful lure of the information industry nor ignore that its technology has broad implications for many aspects of other industries. These two companies that decided less than 11 years ago to get out of the mainframe business at considerable cost to themselves have now decided to gather pieces and enter other aspects of the business.

Back in the days of behemoth CPUs, General Electric and Xerox were among the players. GE laid the foundation for the Multics work and in 1970 "merged" its DP business with Honeywell, contributing ancestors to much of HIS' large and medium size systems. Xerox bought Scientific Data Systems, held it for less than four years, and then in 1975 jettisoned the CPU business with an $84.4 million writeoff. Honeywell assumed support of the Sigma base.

Although GE and Xerox exited the CPU business, they kept in touch via other areas. Both retained growing service bureaus, and Xerox went on a binge in the mid '70s acquiring makers of small peripherals such as Shugart Associates and Diablo. More recently, Xerox sent out tentacles to other areas, and acquired Kurzweil Computer, which started out making systems as aids for the blind. Xerox's obvious initial target is the office; GE is focusing on the manufacturing environment.

Now that the information industry has expanded its horizons and is not focused solely on other mainframers vs. IBM, Xerox is quickening its pace. Xerox' Chairman C. Peter McColough, who commandeered the CPU exit, is 59 and Xerox chiefs tend to reduce responsibilities at age 60.

It hardly seems coincidental that the "Diablo" small business system was recently unshackled from an exclusive distributor agreement with Shasta General Systems and is now being sold by retail stores and distributors. Xerox announced its Star Information System and indicated it is the first of four systems announcements planned for 1981.

EDP Industry Report is published in annual volumes of twenty-four issues each by International Data Corporation, Post Office Box 955, Five Speen Street, Framingham, MA 01701. Entire contents ©1981 by International Data Corporation. **Editor,** Molly Upton; **Census Editors,** Paul Arabasz, Lloyd Cohen; **Contributing Editors,** John Gantz, Jack Hart, David Moschella, James Peacock, Nancy Scull, David Terrie; **Circulation Manager,** Mary M. Trayte. Patrick J. McGovern, Chairman, International Data Group. John P. Breyer, President, International Data Corporation. Editorial ideas and information are researched and formulated by the editorial staff. Information and opinions in each issue are based on the best information available, but their accuracy and completeness cannot be guaranteed. **Subscriptions:** One year, $245; three years $590. Single copies priced as indicated on inside pages. Prices for multiple copies on request. Reproduction without written permission is completely forbidden. Telex 95-1168; Telephone **617/872-8200.**

Other factors to bear in mind are that Xerox has restructured, giving its Office Products Division a wider scope under the helmsmanship of Don Massaro, formerly chief honcho at Shugart. Xerox may have paid a hefty price for Shugart in 1977, but along with it came Massaro, whose track record at Xerox has been very fast. In addition, Xerox has unabashedly recruited heavy executives from other areas. John Titsworth, president of the Information Products Group, was executive vice-president of systems at CDC and William Bayer, president of Xerox Peripheral Systems, was president of Memorex' Peripheral Equipment Group.

And there's Ethernet, which is gathering brute force within the industry. Although there were only five commercial installations when the Star was announced, about 60 vendors have become licensees of the local networking scheme. Among the vendors who have announced intended compatibility are Nixdorf, Zilog, 3 Com, Thomson CSF, and Convergent Technologies. In addition, there are cohorts DEC and Intel; and AMD and Mostek, who have agreed to make chips; and Ungermann Bass, which is making servers for Xerox.

Xerox is organized into two major areas: systems and copiers/duplicators.

The Information Products Group

- Office Products Division
  WP systems, plus small business
- Versatec, Inc.
  Electrostatic printers, plotters
- Kurzweil Computer Products
  OCR readers
- Xerox Computer Services
  Packaged software, online svcs.
- Xerox Communications Services
  Long haul, Xten and WUI
- Xerox Peripheral Systems

-- Shugart Associates
   Floppies, mini Winchesters
-- Century Data Systems
   Cartridge disk drives
-- Diablo Systems
   Daisy wheel printers
-- Xerox Magnetics
   Disk media

The Xerox Business Systems Group

- Information Systems Division
  Markets copiers to major accounts
- Business Products Division
  Markets copiers to small, medium
- Special Business Division
  Mailing equipment, reprographics centers
- Printing Systems Division
  Markets electronic printing systems

Xerox Publishing Group

Markets products for publishing market including Xerox Integrated Composition System

With Ethernet as a central nervous system, Xerox can link a lot of its ganglia together forming different products. For instance, it could go head-to-head with Harris and others in the electronic composition market, linking Star either to other phototypesetting systems or possibly to its own laser printers including the 9700, 5700, and 8044. In addition, it's conceivable that the Star, with the aid of more software, could be used for Cad/Cam.

At the other end of the market, Xerox is planning to announce a low-end workstation, which could consist of the Star minus some software.

Kurzweil has been somewhat of a sleeper in terms of market penetration, although the engineering concepts behind the products were well received. Now, the Kurzweil data entry machine has a Xerox-developed emitter coupled logic processor in the range of 6 million instruction/sec that enables the OCR

Reproduction forbidden. Additional copies airmailed same day. $10 each; single copies to non-subscribers, $20. Call **617/872-8200.**

XEROX STAR

Xerox fired its initial salvo into the "systems" market, targeting the Star information system at the knowledge worker. There are three more announcements yet to come this year. The hardware pricing is aggressive -- discounts up to 20% off the single unit price of $16,500 -- and unbundled software. The price includes a 10 Mbyte Winchester and 1 Mbyte floppy; 29 Mbyte capacity is optional. It's the first workstation designed to be used with Ethernet. Most of the Ethernet connection gear and software is bundled into the unit's price except a $200 transceiver.

Although EDP/IR likes the local net concept, it isn't convinced that Ethernet has the best answer. However, Xerox is making its peripherals and other gear such as workstations so attractive they will sell Ethernet to users. For instance, the 8044 printer, previously introduced as the print server on the 8000 net, can handle a number of fonts, and shadings for graphics with a resolution of 300 dot/in. at a cost of about $30,000.

The Star is geared to the professional who is not particularly keyboard oriented and definitely not DP oriented. Many of the concepts embodied in the system come from the free-wheeling research atmosphere of Xerox' Palo Alto Research Center (Parc) including pictographs -- "icons" in Xerox lingo -- of such functions as in and out baskets for electronic mail, and files. A better mouse than on the 860 is used to manipulate the cursor to the desired function or place on the screen.

The Star is a descendant of Alto, which was developed at Parc. The key difference is that Xerox rewrote and integrated all the software developed by the users at Parc; there are four universal commands. The instruction set and architecture is the same as that of the 8000 servers and the 5700. Although Alto has a lot of man/years of use under its belt, the same cannot be said of the actual Star.

Clearly, software will be the name of the game for the Star. All of it is unbundled with either a monthly license fee, including purchase credit, or prepaid license fee. Standard software for a $60/mo fee includes text editing; graphics -- Star can generate lines either point to point or as an extension of the cursor; electronic mail; filing; printer; and help!.

Options include records processing; equations; advanced graphics which will draw graphs to scale from numbers; cusp, a user programming language (non-DP oriented); foreign languages (keyboards are shown on the screen); and a spelling checker that includes 30K words and rules for endings and plurals. In addition, 3270, 2770, 2780 and TTY emulation transfer material from a CPU to the Star where it can be manipulated via Star commands. Xerox plans vertical industry applications as well as generic functions such as its version of Visicalc.

Xerox was quite unspecific about the hardware, although it does contain a bunch of AMD 2901 bit slice chips and the screen is bit mapped with 808 lines by 1,024 points. The Ball Brothers screen is black on white with several shades of gray, 10 in. by 13.6 in. and can fit images of two pages side by side. A really nice feature is that what you see is what you get -- the screen displays different fonts.

Reproduction forbidden. Additional copies airmailed same day. $10 each; single copies to non-subscribers, $20. Call **617/872-8200.**

system to read 300% faster -- at 20 to 50 char./sec -- than the previous system. It also has a dictionary to reduce operator intervention. This system could take off. It makes a good complement to text functions of the 860 and Star. Xerox is not alone in providing a multifunction product line; Burroughs has word processing and OCR units.

Going one step further, what easier way to enter existing documents into a records handling system? And the Star has some sort of records processing software on it, although it's unclear exactly how powerful. The Burroughs system from Systems Development Corp., on the other hand, is being peddled as a full-blown records management system.

However, there are a couple of missing elements in the Xerox plan. Regardless of the technical merits of the arguments that PBXs can or cannot handle traffic among workstations, the fact remains that Rolm and Datapoint are positioning themselves with systems that can handle both voice and data traffic. Rolm has a large OEM contract, including manufacturing rights, for Convergent's workstation, and Datapoint recently announced the Information Switching Exchange, a PBX that accepts various phones and terminals and is compatible with Arc.

In addition, Xerox has no products pertaining to speech recognition, generation or storage capabilities although work might be ongoing at Parc. There are some who believe that speech messages will be an integral part of plans for office equipment in the future.

GE targets factory of the future

General Electric thought it was time to invest in technology in a massive way to create a unified flow of information in the manufacturing process. Its plan is to "close the loop" between engineering and the factory. GE intends to have plans conceived by designers fed directly into the fabrication process as well as into quality control, materials requirements planning, and inventory. GE expects its Industrial Electronics Group will grow from a little over $1 billion in sales to $5 billion before the end of the decade.

In order to assemble building blocks in its plan to be the "World Supermarket of Automation." GE has acquired Intersil Inc. and Calma Company and formed an Automation Business Systems Business which, under a license with DEA of Italy, will market and produce robots. In addition, GE is increasing its strength in the numerical control business and plans a $1 billion infusion into corporate R&D. Existing facilities such as GE's Information Services Co. (Geisco), complete the picture. GE's investment to date totals over a half billion dollars in advanced electronics and sophisticated automation technologies, according to Ed Hood Jr., vice-chairman and executive officer.

Part of the half billion dollars was the $235 million purchase of Intersil, known for its complementary MOS (CMOS), power Mosfets, and data acquisition unit called Datel-Intersil. CMOS fits in nicely with GE plans because it consumes little power and has good immunity to electrical "noise," and thus is useful in factory environments. The power Mosfets, as opposed to bipolar, enable chips to be combined with power electronics on the same chip, thus effectively saving between 20% and 60% of energy now consumed by constant speed electric motors, according to Donald Grierson, senior VP of the Industrial Electronics Business Group.

Reproduction forbidden. Additional copies airmailed same day. $10 each; single copies to non-subscribers, $20. Call **617/872-8200.**

Intersil considers itself second in the data acquisition market, behind Analog Devices. Data acquisition involves analog-to-digital and digital-to-analog conversion, enabling a microprocessor-based unit to determine when to turn a valve or change a mixture. Intersil's sales have been growing at an average of 25%/year for the past five years, and President Orie Hoch said he expects at least 15% to 20% of its sales to be to GE divisions by the time its sales reach $500 million in the next few years.

Calma

To insure that it has a full piece of the CAD/CAM pie, GE sold its partial interest in Applicon and bought Calma from United Technologies for $100 million and possible additional payments up to $70 million geared to sales over the next four years. Calma's 1980 sales totaled $62 million and order backlog at the end of the year was $17 million. While Intersil will supply small building blocks, Calma's interactive graphics products are "the central pillar of the factory of the future," according to Grierson.

From Calma's systems will flow the first manufacturing process GE plans to automate: design and process planning. Data from the Calma CAD/CAM systems can be transferred directly into GE numerical controls for machine tools.

Calma is organized along industry lines. It has products for the electronics industry, such as IC and VLSI design, as well as for the mechanical industry including the design, drafting and manufacturing process (DDM). Another division has been formed to serve the architectural, engineering and construction businesses.

Calma's current offering to the integrated circuit industry is Chips, a 32-bit precision system for use by designers. A Vector Memory Display terminal features pan and zoom and has a speech recognition system enabling designers to tell it such things as "split this image and magnify the right side," President Bob Benders said. Future products include Sticks, which will allow IC designers to work with symbols less complex than actual IC circuits.

Calma's Mechanical Division offers a DDM system that "allows designers to work with three dimensional models on a graphic display and then take those models to production drawings in a single step," Benders said. Calma systems are currently driving machine tools directly, eliminating several steps. The DDM can show up to six different simultaneous viewports of a true 3-D object. In the future, the division will produce a "solids modeling" system that will enable designers to work directly with solid shapes.

The next element is requirements planning and control, which Geisco happens to offer, as well as a worldwide communications network that can link a multi-plant business. Geisco's Mitrol operation developed an applications development language especially suited for materials requirements planning functions. And when future Calma workstations incorporating the power of today's systems are linked to the Geisco network, not only can each manufacturing engineer produce process plans, NC programs and tooling designs, but these can be fed into an updated material requirements and manufacturing plan, GE said.

On the factory floor, manufacturing people can access the same design data and use it to instruct numerical control machines. "Automation systems driven by programmable controls then may speed the component to a station where

Reproduction forbidden. Additional copies airmailed same day. $10 each; single copies to non-subscribers, $20. Call **617/872-8200.**

lasers cut or weld it, and then on into the grippers of robots that join components into subsystems or a final product," Grierson observed. Then solid state cameras (that GE happens to make), directed by computer, judge quality and workmanship.

GE plans to practice what it preaches, putting these building blocks together with common software and into operation in its own factories.

GE's Robots

GE's initial offering in the area of robotics will be the Allegro, a multi-armed, programmable robot for assembly and handling that is controlled by dual microprocessors. Licensed by DEA of Italy, the Allegro is said to have a sense of touch so it can react to missing components or recognize and reject substandard parts. Its multiple arms can repeat the same motions to within one-one thousandth of an inch.

GE is accepting Allegro orders for delivery late in 1981 and early 1982 and plans to also offer a broader line of robot systems. GE said it intends to be among the major worldwide producers of automation systems by the mid 1980s. It estimates the North American market for robot systems should grow from $65 million in 1980 to $1.5 billion by 1990. Some segments, such as assembly robot sales, should experience average annual growth rates of over 50% during the decade.

The Allegro can have up to four arms, each coordinated with the others, all under control of one microcomputer. Another micro handles external communications, such as through simplified instruction programming language or a self teach mode.

NCC PROVIDES STOMPING GROUND FOR VARIETY OF JAPANESE PRODUCTS

The windy city hosted the NCC hordes once again, and the Japanese blew in with the gusts, using the show as they have Hanover Fair in the past; primarily to test the market reception for products and align distributors and dealers for future penetration. Attendance was well over 50,000. Despite some preshow objections by nonexhibitors, the "personal computer" exhibits were intermixed with the rest of the gang, and if the truth be told, they were indistinguishable in content and approach from the rest of the gang. Hewlett-Packard's Corvallis Division showed its 80 and 85 models, although the rest of HP was absent as usual. The two floors of McCormick Place floors were dominated by:

- a wide variety of printers,
- a zillion terminals, many with graphics, including VT-100 lookalikes sporting additional features such as graphics and color,
- small business systems; many touted "improved" office functions such as word processing and electronic mail.

Xerox' Star shone brightly, undisputedly gaining the popularity prize; the large booth was packed with about 60 people every time EDP/IR cruised by. There were other notables, but with less crowd appeal. Intel put through its

Reproduction forbidden. Additional copies airmailed same day. $10 each; single copies to non-subscribers, $20. Call **617/872-8200.**

paces its 432 chip set on its new 600 board and an Ethernet exhibit linking gear at the Intel, Xerox and DEC booths. Intel people admitted to being overwhelmed by the interest expressed in Ethernet linkages and development kits prior to the chip set availability.

EDP/IR counted about 14 Japanese exhibitors; products ranged in size from the TRW-Fujitsu system aimed at the IBM System/34 market with its RPG, to the Sony Typecorder (EDP/IR Jan. 30).

Many featured printers and small business systems. Sharp's two ink jet printers were literally beseiged by attendees eager to get specs and learn when they would be marketed. The throngs seemed undeterred by tentative availability date (next spring), tentative specs and the lack of prices. The printers use the charge amplitude modulation method. The Model 500 prints at 100 char./sec with a 24 x 20 dot matrix and has RS 232C and Qume compatible parallel interfaces. The Model 300 prints bidirectionally at 275 char./sec with a 9 x 13 dot matrix; its interfaces are RS 232C and parallel "similar to Centronics." Sharp sells the units in Japan for about $5,000.

Sharp's WD-7000 word processor and XY-3200 small business computer were also "tentative." The WD 7000 is a standalone, floppy based system with very good resolution on its green phosphor screen. The XY 3200 has its own operating system that runs Sharp's business Basic but also has CP/M; Sharp is talking with Peachtree about specific applications development. Memory is a bit more than many domestic entries; 32K to 64K bytes ROM and 64K to 112K RAM.

Hitachi's MPR 2250 dot matrix printer with OCR-B font used a 9 x 7 dot matrix or 23 x 14 with the OCR-B feature, printing at either 250 char./sec bidirectionally or 40 char./sec. The unit is positioned against Centronics' Model 700. C. Itoh Electronics' Pro/Writer dot matrix units featured eight character sizes and claimed its 144 x 144 positions in 1 square inch make it suitable for graphics. Print speed is about 100 char./sec. The big news is the $399 OEM price. C. Itoh also showed a mid-range, 40 char./sec daisy wheel printer, and many tubes, including color.

Toshiba showed its Wang look-alike word processor, as it has at various office automation shows.

Canon got good play with a controller device from Imagen Corp., Los Altos Hills, Calif. It basically uses a laser printer with a 240 pixel/in. resolution that paints images on a drum in bit-raster form. The device prints about 10 page/min and features software-definable fonts. The price for the copier and controller will probably be in the high $20,000 area, Imagen said.

Desktop/small business systems are sprouting up all over. Radio Shack, hoping to leave the rest of the pack in the dust, announced 3270 and 3780 communications for its TRS-80 II, available in August; each costs $995. In addition, there's a reformatter package to facilitate transfer of files from TRSDOS to IBM 3741 single density floppies.

Ohio Scientific showed that it speaks network lingo, too, and had its IBS-Net linking several terminals and two data bases. It unveiled the Challenger V workstation with 132 column screen with programmable fonts and graphics capabilities. The station can have an optional 68000 with 200K bytes now and 1M byte later of main memory and two 5 in. Winchester disks.

Reproduction forbidden. Additional copies airmailed same day. $10 each; single copies to non-subscribers, $20. Call **617/872-8200.**

Apple's booth was bright and cheery, and quite popular despite the relative lack of new hardware, although it did announce an IEEE 488 interface card for Apple II and II Plus priced under $500. In the software realm, Applegraphics II provides a multidimensional graphics capability priced at $95. The App½e III wasn't forgotten; as of July it will have a Mail List Manager program costing $150. . . . Smoke Signal Broadcasting's 6809 Chieftains have a multi-user, multi-tasking operating system, Basic, and a 30 Mbyte Winchester drive. . . . Durango may have the right approach. Although Durango wasn't present at the show, there were a couple of other desktops with integrated CRT, printer, keyboard and floppies, such as Q1's Microlite II. . . . Zenith joined the stampede to the office and announced Wordstar, MailMerge, DataStar and SuperSort for its Z-89 microcomputer.

Atari means business was the message transmitted from the huge booth at NCC, complete with several business oriented applications for its desktop system, including word processing. . . . TI had a busy booth, complete with a "personal system" minus price and specifications.

Nixdorf plans an 8845 Integrated Office System designed for data entry, word and data processing functions that feature Editor, Nixdorf's own programming language. Typical system with CPU, 128K memory, 33 Mbytes disk, eight workstations, three 45 char./sec printers, 165 char./sec printer and tape is priced at $99,480.

In the office workstation arena, Alanthus Data Communications Corp., subsidiary of M/A-COM Inc., has become Convergent Technologies' first distributor. Piiceon Inc., San Jose, has a Model 1000 that looks like it's headed for the pass along with Artelonics. The Piiceon 1000 is an 8086-based device with CP/M 86 (as will be Artelonics), floppies and 128K; OEM price is $8,654. Piiceon also makes memory and controllers for S-100 bus systems.

Time was when Winchester disks weren't removable. But New World Computer Co., Costa Mesa, Calif., has developed a package that includes two 5.25 in. mini winis back-to-back with one removable.

Data General introduced commercial software and communications for its MV/8000, including DG/SNA that allows AOS and AOS/VS Eclipses to function within an IBM SNA network. Cobol, RPG II, database management and APL are among the software announcements. In addition, DG enhanced Xodiac network management to include a 32-bit AOS/VS Xodiac capability.

Microdata focused on distributed data processing with its announcement of Sovereign in the U.S. Developed in 1978 by its Computer Machinery Co., Ltd. subsidiary, the system features file and keystation processors and peripherals linked by DataWay, an external packet switched bus with speeds of 70K byte/-sec. Languages include a data base management system "similar" to English, Cobol 74 and Basic II. Communications include 2780, 3780, 3270 and Hasp. To target the Fortune 1000 market, Microdata is setting up separate (direct) sales and support staff.

One of the nicest CRT resolutions by far belongs to Datagraphix' Charactron technique that stencils letter characters on the screen.

Reproduction forbidden. Additional copies airmailed same day. $10 each; single copies to non-subscribers, $20. Call **617/872-8200.**

EDP industry report

● THE INTERNATIONAL DATA CORPORATION'S NEWSLETTER FOR EXECUTIVES CONCERNED WITH THE ELECTRONIC DATA PROCESSING INDUSTRY

"The Gray Sheet"

MOLLY UPTON, EDITOR APRIL 23, 1981 • VOL.16,NO.23 P.J. McGOVERN,PUBLISHER

OPM Casts Shadow on Lessors -- Page 6

PRIME, TANDEM EXTEND SUPERMINI LINES; VARIATIONS ON 32-BIT THEME

Prime and Tandem, two darlings of Wall Street, simultaneously stretched the upper limits of their product lines recently -- Tandem by adding 32-bit addressing capability and other enhancements and Prime by adding multistreaming capability to a new top-of-the-line 850 and enhancing current products. It axed the 450 and the 650 in the process. In both cases the new products are faithful to the established market targets of the companies.

Even the nomenclature "supermini" seems a bit inadequate. Prime says its 850 is in the performance range of a 4341-II and DEC 2060 and expects it will be about 50% to 60% faster than the Vax 11/780.

Tandem's Nonstop II will have immense networking capabilities and was designed to cope with "hundreds" of terminals. In terms of millions of instructions per second (not Tandem's favorite unit of measurement) the Nonstop II is around 4.5 or roughly equivalent to an IBM 3033N, Tandem said.

Tandem indicated the II is the cornerstone to carry the company into the '80s and EDP/IR expects a rash of communications software announcements.

Both announcements reflect the (almost) advent of the 64K byte memory device. Tandem speaks of eventual 16 Mbyte main memory per CPU while Prime says it will have 64K chips in its shipments with the limit being 8 Mbyte/CPU. A 16-CPU Tandem system each with 16 Mbytes makes a 256 Mbyte system -- should anyone want such a thing.

What will be the net effect of these announcements? Well, for Tandem it puts some additional space between it and some upstarts that are targeting the fault-tolerant market and also makes it a more attractive choice for the growing number of large networks.

Prime's move does seem to put it ahead of the supermini pack in terms of reported performance and a big plus is its software compatibility with previous Prime products including its Primenet and various modes of communication with IBM products.

EDP Industry Report is published in annual volumes of twenty-four issues each by International Data Corporation, Post Office Box 955, Five Speen Street, Framingham, MA 01701. Entire contents ©1981 by International Data Corporation. **Editor,** Molly Upton; **Census Editors,** Paul Arabasz, Lloyd Cohen; **Contributing Editors,** John Gantz, Jack Hart, David Moschella, James Peacock, Nancy Scull, David Terrie; **Circulation Manager,** Mary M. Trayte. Patrick J. McGovern, Chairman, International Data Group. John P. Breyer, President, International Data Corporation. Editorial ideas and information are researched and formulated by the editorial staff. Information and opinions in each issue are based on the best information available, but their accuracy and completeness cannot be guaranteed. **Subscriptions:** One year, $245; three years $590. Single copies priced as indicated on inside pages. Prices for multiple copies on request. Reproduction without written permission is completely forbidden. Telex 95-1168; Telephone **617/872-8200.**

Although both picked the same day to host the press -- Prime at its new headquarters in the revamped former Carling brewery and Tandem in sunny California overlooking its swimming pool -- the approaches are quite different. Prime concentrated on throughput while Tandem focused on memory access.

What users want

Tandem said it took a look at users' requirements and saw users needing more: virtual memory, address capability/main memory, I/O buffer space, communications lines and virtual circuits. Its solution is the NonStop II, a system with 32 bit addressing capability (but not a true 32 bit word length system) that enables each CPU to address up to 1 billion bytes virtual and 16 Mbytes main memory -- if and when the price of 64K chips comes down. Until then, the NonStop II's maximum memory is 2 Mbytes, the same limit as for I.

Why not a true 32 bit system? It seems nearly all the superminis are going this route. Tandem emphasized its market is transaction processing and that most applications don't need to carry around a 32-bit word and added that it wanted the system to be object code compatible with the Nonstop I. The 100 nsec processor cycle time was deemed adequate and not revamped.

In addition to memory access, other enhancements include:

- 32K bytes loadable control store -- all future enhancements will be via microcode.
- Memory cycle time increased 25% to 400 nsec.
- I/O channels now have a 5 Mbyte burst rate and the block transfer size is increased from 4K to 64K.
- Tandem added an operations and service processor for remote diagnosis and system operation that should help reduce service costs.

Shipments have already started. The basic system starts at $144,475 for a dual CPU with 512K bytes each, a mag tape and controller and an operations and service processor. A typical six processor system will cost around $1 million including software, CPUs, memory and peripherals, Tandem said.

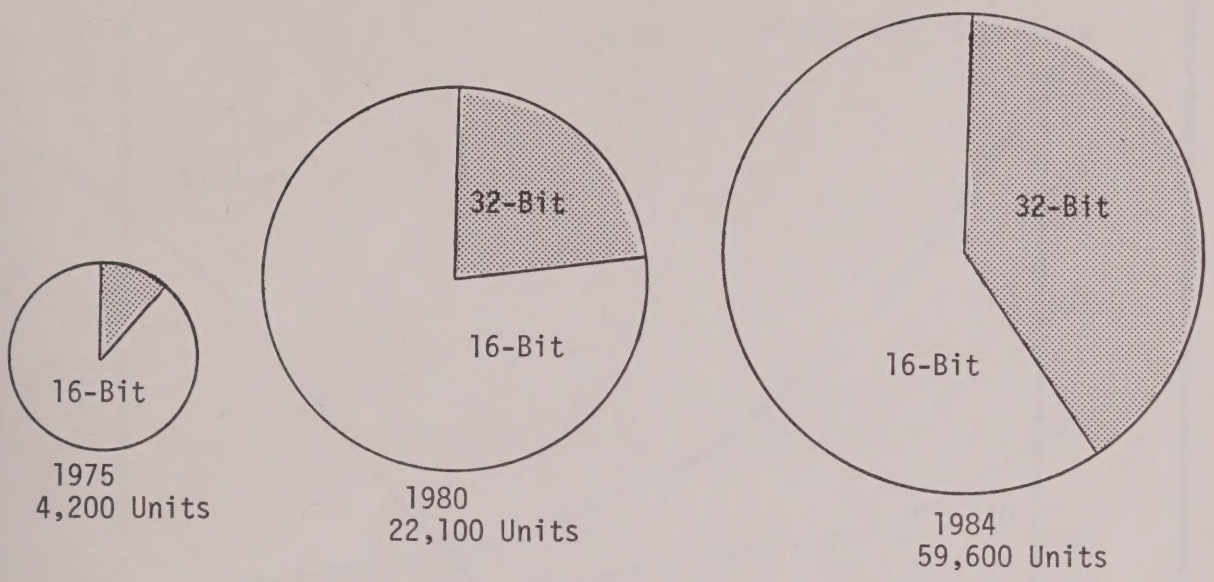
It's conceivable that Tandem's networking schemes have already met and conquered many of the thorny problems that are confronting manufacturers devising peer to peer networks. One observer remarked that although users think they buy Tandem because of its fault-tolerant features, they really buy it because of its expandability.

An interesting feature is the trade-in policy. After a year, trade in allowance on a NonStop I can be up to 100% of current list price; but there are no credits for the first six months. Tandem expects between 30% to 50% of its customers may upgrade. Initially, Tandem is targeting the II for new, large applications. Tandem indicated the margins should be better on the II. Users can intermix IIs and Is on networks.

The upgrade consists of Tandem delivering a new CPU cage, redesigned to accommodate "thick fingered customer engineers" and other moves to improve serviceability Tandem emphasized its efforts to control support costs.

Reproduction forbidden. Additional copies airmailed same day. $10 each; single copies to non-subscribers, $20. Call **617/872-8200.**

WORLDWIDE SUPERMINI SHIPMENTS BY U.S. MANUFACTURERS
16-, 32 BIT SYSTEMS
(Copyright 1981 -- International Data Corporation)



Prime

Prime decided users want more throughput, and thus devised multistreaming or parallel processing on its 850. The 850 is rated as 50% to 60% faster than the 750 with multiple jobs and supports 128 terminals. A typical system will cost $525,000, including one CPU, 4 Mbytes, 300 Mbyte disk, a tape drive, printer and controller, networking hardware and software, 20 Prime terminals, Fortran, Cobol, DBMS and Primos.

The 850 has a cache of 32K, with 16K for each of two instruction stream units, in comparison to the 750's limit of 16K. A stream synchronization unit manages memory access synchronization and internal system messages between the instruction stream units. As with the 750, there's hardware support for floating point, decimal point and character string operations. A burst mode I/O enables the system to transfer 64 bits at an 8 Mbyte/sec rate.

Prime retained its policy of trade-ins for equipment credits. This policy applies to systems returned within two years of initial installation.

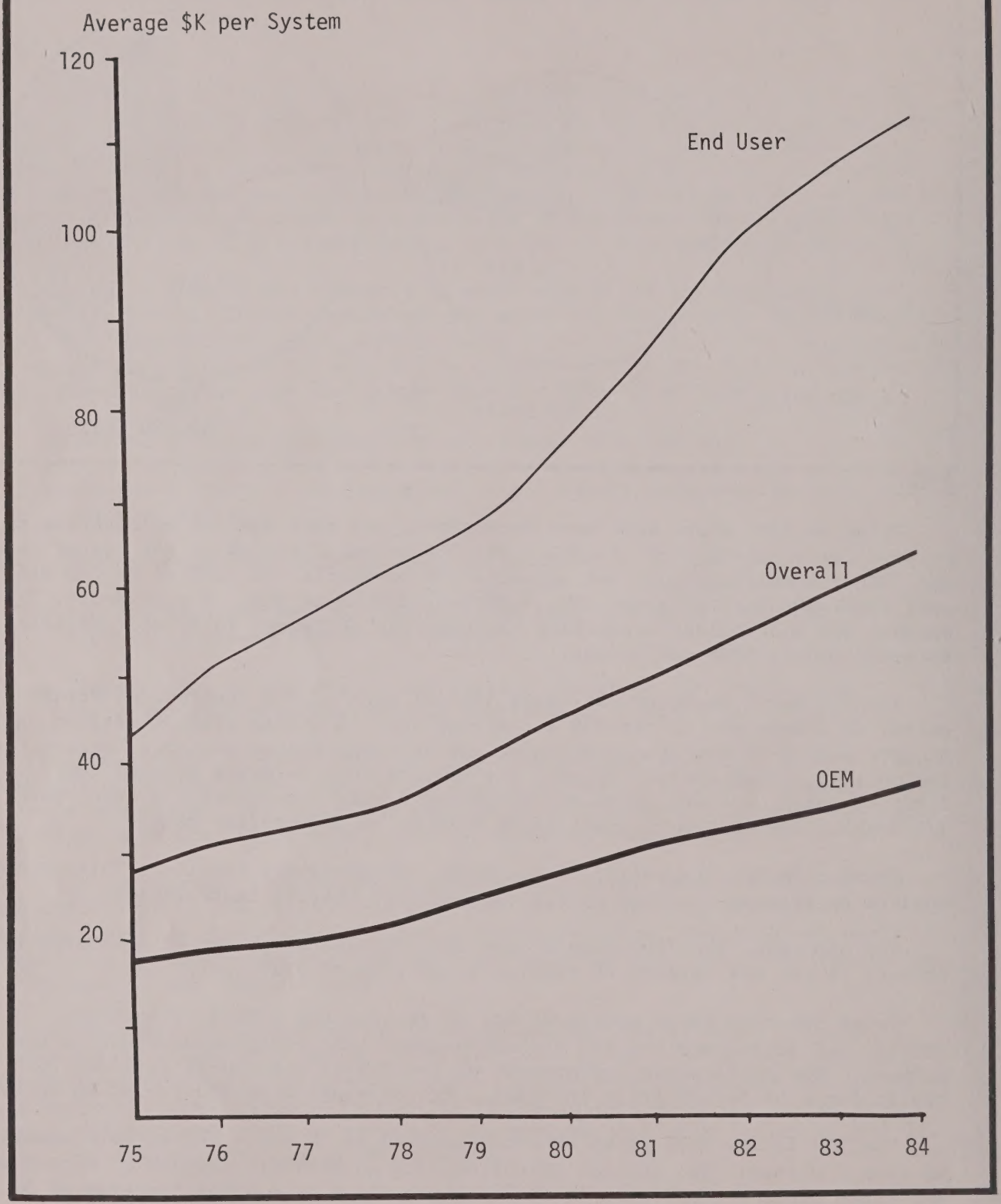
The old star, the 750, wasn't ignored. Through no-charge enhancements to Primos, it can now support 96 terminals, up from 64 previously.

Prime enhanced three models of its 50 series, the 150-II, 250-II and 550-II, and jettisoned the 450 and 650 because that performance range is now covered. The performance improvement of the 150-II and 250-II is about 70% better for a 5% to 10% price increase. Prices range from about $39K to $87K.

The 550-II has been given 8K cache instead of 2K and 4 Mbytes main memory, up from 2 Mbytes. The decimal operations are in hardware instead of microcode and Prime rates its performance at 35% above the I at a price increase of 5%. A system runs $89K to $130K including CPU, memory, console, communications hardware and Primos.

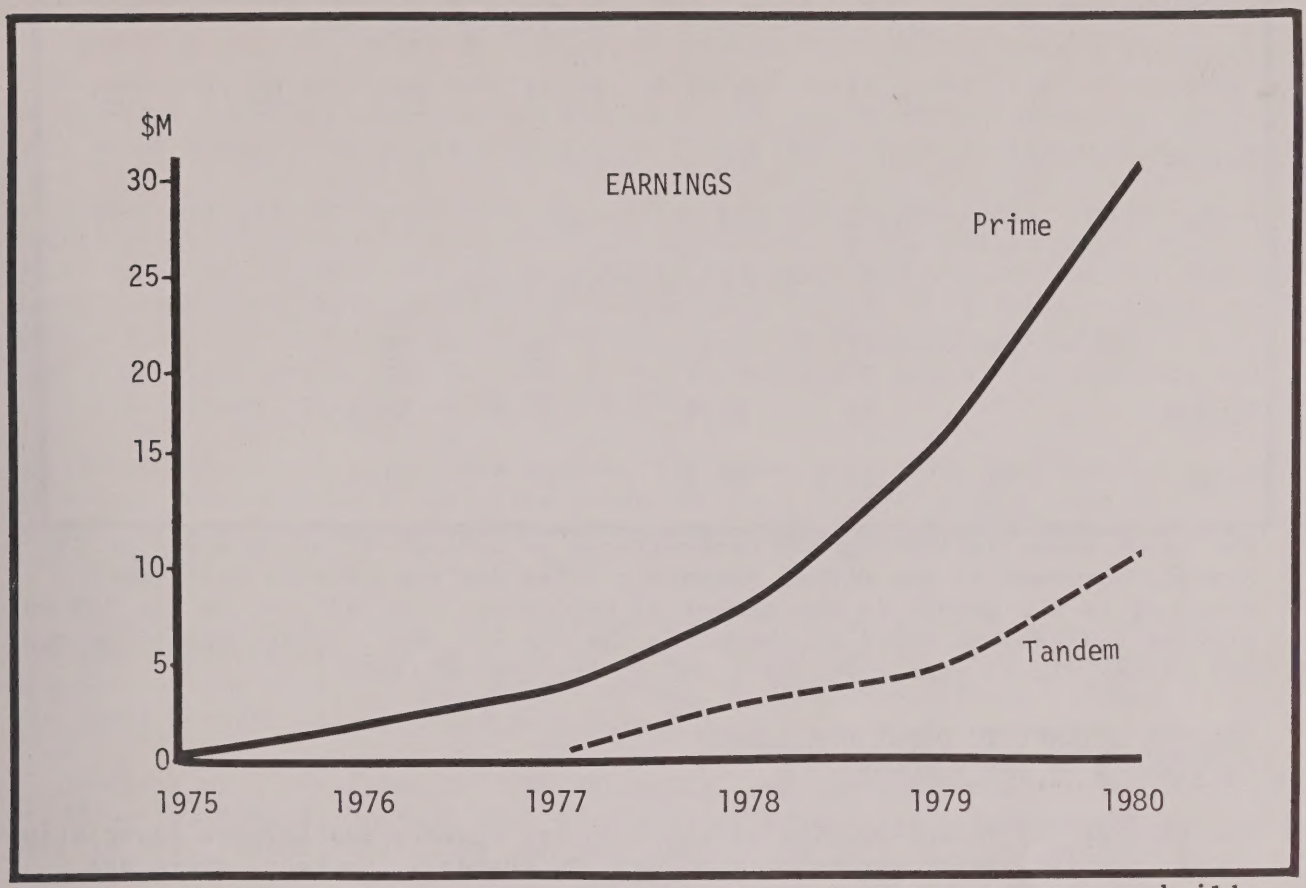
Reproduction forbidden. Additional copies airmailed same day. $10 each; single copies to non-subscribers, $20. Call **617/872-8200.**

AVERAGE REVENUES PER MINICOMPUTER SYSTEMS SHIPPED 1975 - 1984
(Copyright 1981 -- International Data Corporation)



Not surprisingly, the popularity of supermini computers, and their concomitant higher prices, is raising the average price of systems shipped. This figure does not include add-on revenues to manufacturers.

Reproduction forbidden. Additional copies airmailed same day. $10 each; single copies to non-subscribers, $20. Call **617/872-8200.**



Whereas formerly Prime offered only the low end systems to systems builders, it now offers the complete range. These are generally sold as complete systems to which applications software is added.

High growth characteristics

As the chart above indicates, both Tandem and Prime have established impressive track records in earnings growth. Remember, Prime shipped its first system in 1972 while Tandem's first shipment was 1976.

Prime started out along the traditional mini route of being largely an OEM supplier and used that base to support its efforts of selling into the end user market. Now, its OEM sales account for only about 10% of sales. It initially targeted the scientific and engineering community for its end user sales, and not surprisingly, is pitching its 850 to that same market.

Prime's major change in direction came when President Kenneth G. Fisher and Marketing Vice-President Robert Morrill came on board in 1975. At that time, the company set its sights on the end user market and saw a niche for interactive systems alongside general purpose mainframes.

Tandem gets about 33% of its revenues from sales to OEMs, including systems houses. It still has much of its founding management intact. Some folks have shifted roles; Jim Katzman is now running his own domain of the Western Regional Sales Division from Santa Clara.

One doesn't get to be a darling of Wall Street without some intelligent planning and some heavy expenditures for product development. Take a look at

Reproduction forbidden. Additional copies airmailed same day. $10 each; single copies to non-subscribers, $20. Call **617/872-8200.**

R&D EXPENDITURES AS PERCENT OF REVENUES

	77	78-77	78	79-78	79	80-79	80
Tandem	14	100	8.8	115	8.3	88	8
Prime	6.1	153	8.3	56	7.9	69	7.6

SALES PER EMPLOYEE ($K)

	76	77	78	79	80
Tandem	12	74	83.4	87.9	98.4
Prime	60	62.9	68.4	72.2	81.3

the table above indicating R&D expenditures as percent of sales and also the annual increases of the actual amounts. Sales per employee is also impressive, as is the growth in the number of employees. In 1975, Prime had 239 employees and grew to 4,061 employees at the end of 1980. Tandem had 10 at the end of its fiscal year 1975 and 1,387 at the end of 1980.

LESSORS ATTEMPT TO DODGE OPM SHADOW CAPITALIZE ON IBM'S MOVES

The talk at the recent meeting of the Computer Dealers and Lessors Association (CDLA) focused almost exclusively on the OPM scandal. However, there are other events occurring that affect the lessors in the near and long term -- both of which revolve around IBM. Big Blue has thrown the world a deceptively juicy bone in the form of delayed deliveries of the 3380 disk drive, thus ballooning prices of 3350s. But it has also decided to tighten up its policy regarding third party acquisitions of its new big CPU, the 3081.

The scandal of OPM, one of the largest leasing companies, has cast a long shadow on the leasing community as a whole and the effect of OPM's demise will cause ripples in the industry for some time to come. Lessors are now being squeezed from two different directions. First, the lenders have become cautious about funding new leases. IDC's residual value service has noticed that lenders are becoming very concerned about forecasted values of the equipment they are financing. Second, users are becoming wary of going to third party sources as opposed to acquiring directly from the vendor.

Future fallout?

It may be a long time before the full ramifications are apparent. In fact, all of the details may not yet have surfaced. One positive result may be that the third-party market may actually be strengthened by better documentation and more realistic residual values. It is conceivable that a shakeout may occur of small lessors whose financial underpinnings are wobbly.

OPM filed for Chapter XI protection last month after being put under federal investigation for obtaining financing for computers by writing fraudulent leases. This isn't the first time OPM has found itself in court; in March, 1980 OPM pleaded guilty to 22 counts in a check-kiting scheme and was sentenced with a maximum fine of $110,000.

Reproduction forbidden. Additional copies airmailed same day. $10 each; single copies to non-subscribers, $20. Call **617/872-8200.**

OPM took enormous risks on optimistic residual values and useful lives of used computer equipment, which enabled it to offer the lowest bids. In order to convince users to sign long-term leases, OPM provided them with side letters which the lessees thought gave them the option of early termination.

These letters led the lessee to believe that if the equipment couln't be remarketed for the full lease rate, OPM would make up the difference. However, what some lessees are finding out is that they had signed "hell or high water" leases and that they are now responsible for the full lease payment regardless of the side letter. Because OPM is in no position to remarket systems that users would like to turn in early, users are stuck with payments and with floor space consumed by their OPM 370s.

In an attempt to dispel the shadow, the Computer Dealers and Lessors Association contemplated a four-page ad in the Wall Street Journal stating the organization's code of ethics. However, not wanting to appear to be overreacting, the CDLA cancelled its plans.

Itel Corp., which also fell into Chapter 11, is busy vigorously denying its problems were similar to those of OPM. While Itel did file Chapter XI and was hurt by the decay in the IBM 370 market, a spokesman stressed that Itel was never accused of any fraudulent acts.

Because of IBM's delay in 3380 shipments, and the stretchout in deliveries of 3350s (presumably because some of the lines have already been converted over to 3380 production) 3350s are perceived to be in very tight supply.

To exacerbate matters, the market is experiencing a "shortage mentality", leading to double and even triple ordering. Expectations of the market getting even tighter before the supply increases is creating a spiraling effect, pushing prices up even further. Thus, 3350 values have gone through the roof. Recently a 3350 drive was sold for 156% of IBM list. Even 3370s are being affected. One month ago, 3370s were trading close to IBM list and now are being sold for 110% to 115% on the used market.

But this phenomenon is likely to be relatively shortlived after the 3380 and the PCMs' versions start to meet demand -- which should be in 1983. .

At that time, many users will most likely be in a position to drop their 3350s onto the used market, creating a glut. The residual value of the 3350 will then experience a drastic decline due to the unit storage price advantage of the 3380. The anticipated rapid decline of 3350 values is leading vendors to promote sales or long term leases on 3350 and 3350-type disks. One PCM manufacturer will promise shorter delivery time for purchases or 4-year leases. This purchase orientation will create an even greater surplus of 3350s on the used market (from 1984 on), driving used prices down further. By the first part of 1983, the 3350 may trade for less than half of what it is selling for now.

Lessors aren't very happy about IBM's circumspect policy of taking 3081 orders only from those who IBM thinks have "appropriate" financial backing. Because of the high price of the 3081, this policy has more severe ramifications for lessors than it did for the 4300s. Small lessors find themselves unable to participate as banks are somewhat reluctant to commit money for a machine whose delivery position is at least 18 months out.

Reproduction forbidden. Additional copies airmailed same day. $10 each; single copies to non-subscribers, $20. Call **617/872-8200.**

• SEVEN-YEAR ITCH HITS FOLEY SQUARE. Judge David N. Edelstein, who has presided over the trial proceedings of U.S. vs. IBM for nearly six full years, has decided a seventh year would be all he could bear. He told both parties they should plan to be through by May 30 and urged them to reach an out of court settlement, even offering to participate in the negotiations. However, after the final day in court, each side may have another six months of fact findings and comments. Edelstein's mandate came after he denied IBM's third motion to dismiss the suit or declare a mistrial. The latest motion was based on the grounds that IBM's attorney-client privileges were abused. Thought of settlement is not novel; both sides have met at least eight times attempting to agree on procedures. The knotty question appears to be the remedy for alleged monopoly; the government has called for divestiture.

• NCR REVAMPS LINE dubbed the I-9000 series and caps its product line with a 32-bit I 9050. The I-9010 replaces the I-8100 small business system and the virtual memory I-9010 and 9020 complete the line. The systems are upward compatible and applications software compatible with the I-8000s. Hardware prices are roughly comparable with the I-8000 line, beginning at $15K for a typical 64K 9010 and running to $300,530 for a 9050.

• UNIVAC MANAGEMENT SHIFTS, with Joseph Kroger becoming President of Sperry Univac, while the previous holder of that title, Richard Gehring, assumes corporate-level strategic program responsibilities reporting to Sperry Rand Chairman J. Paul Lyet. The new head of Univac was formerly president of Univac's marketing and services division.

• TIES THAT BIND . . . Carl Amdahl has joined his father's company, Acsys Ltd., as vice-chairman of the board. Meantime, he will continue as a member of the Magnuson Computer board and has entered into a three year consultant arrangement with that company.

• SPCC SPINS OFF SATELLITE division under the moniker Spacenet to handle the acquisition, launching and operation of two satellites slated for launch in January and mid-year 1984. Southern Pacific Communications Co. offers Sprint, a long distance service priced below Bell's.

• PICTUREPHONE IS COMING -- not for individual use, but for teleconferencing, if the FCC grants Ma Bell's request to construct and operate facilities for 11 cities initially. A graphics display unit will tranbsmit images as well as other devices, such as transparencies. In addition, AT&T plans to also have a hard copy device, presumably facsimile. Scheduled to start at year end 1981 in New York and Washington, D.C., plans call for 41 cities total. Costs for equipment installed on customer premises for a typical six conferee setup run about $117,600 as well as a monthly charge of $11,950; use between New York and Chicago could cost about $480 for the first three minutes.

• BLACK BOXES enhance dumb terminals. D P Communications Corp., New York City, has rigged its Teleflex box, based on an HP 1000L, to enable Ascii terminals to talk with 3270, Basic Four, IBM Series 1, and TTY. Users can select other protocols as well. Local Data in Torrance, Calif., offers a $1,750 DataLynx converter with three I/O ports that handle bisynch, an operator console or mini, and another asynchronous terminal.

Reproduction forbidden. Additional copies airmailed same day. $10 each; single copies to non-subscribers, $20. Call **617/872-8200.**

EDP industry report

• THE INTERNATIONAL DATA CORPORATION'S NEWSLETTER FOR EXECUTIVES CONCERNED WITH THE ELECTRONIC DATA PROCESSING INDUSTRY

"THE GRAY SHEET"

MOLLY UPTON, EDITOR MARCH 24, 1981 • VOL.16,NO.21 P.J. McGOVERN,PUBLISHER

Mainframers Thwart Headwinds -- Page 5

1981 EDP BUDGETS TO RISE WHOPPING 20% TO $66.6 BILLION; 1980 GROWTH EXCEEDED FORECAST

Looks like another banner year for user spending, with IDC forecasting user spending will rise to $66.6 billion, a healthy 20% rise above the actual EDP spending of $55.4 billion during 1980. The forecast reflects some pent-up demand, especially for medium-sized gear such as the 4300s and S/38, as well as the quintessential factor of elasticity.

International Data Corp. surveyed 250 companies to discern patterns in user spending. The responses generally are from the central MIS departments and reflect their organizations' philosophy on whether they did or did not include such items as localized end user training, word processing and desktop computer expenditures.

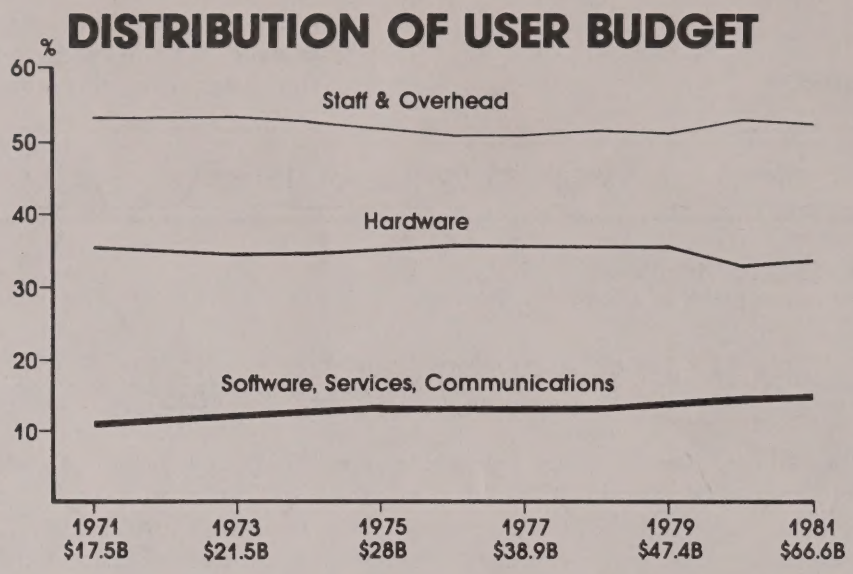
Once again the software/services sector should outpace the other portions with a projected 25% annual rise to $4.3 billion compared with an actual 23% rise last year. The survey basically included service bureau activity contracted by the responding MIS department and does not include the bulk of the service industry's revenues garnered from individual user departments.

Software packages get the prize as the section showing the highest consistent rate of growth, as the sheer economics of not inventing it here become incontrovertible in many situations.

Hardware, including remote equipment, will jump from a 9% increase in 1980 to a 22% increase in 1981, presumably fueled by such happenings as shipments of the lower-priced 303X and the new 3081 and other gear announced by both PCM and the other mainframers. Part of the increase in spending will be a consequence of increased rental or lease payments to the manufacturer, which should jump 23% from $6.2 billion to $6.8 billion in 1981. At the same time, users will also be buying gear, and IDC expects an 80% rise in capital expenditures for expensed purchases.

However, despite the jump in hardware expenditures, hardware will consume only a fraction more -- 34% -- of the overall budget than it did in 1980. Staff related expenses, an item of concern to DP managers who are fiercely

EDP Industry Report is published in annual volumes of twenty-four issues each by International Data Corporation, Post Office Box 915, 214 Third Avenue, Waltham, MA 02254. Entire contents ©1981 by International Data Corporation. **Director,** James Peacock; **Editor,** Molly Upton; **Census Editors,** Paul Arabasz, Lloyd Cohen; **Contributing Editors,** John Gantz, Jack Hart, David Moschella, David Terrie, Nancy Scull; **Circulation Manager,** Mary M. Trayte. Patrick J. McGovern, Chairman, International Data Group. John P. Breyer, President, International Data Corporation. Editorial ideas and information are researched and formulated by the editorial staff. Information and opinions in each issue are based on the best information available, but their accuracy and completeness cannot be guaranteed. **Subscriptions:** One year, $245; three years, $590. Single copies priced as indicated on inside pages. Prices for multiple copies on request. Reproduction without written permission is completely forbidden. Telex 92-3401; Telephone **617/890-3700.**

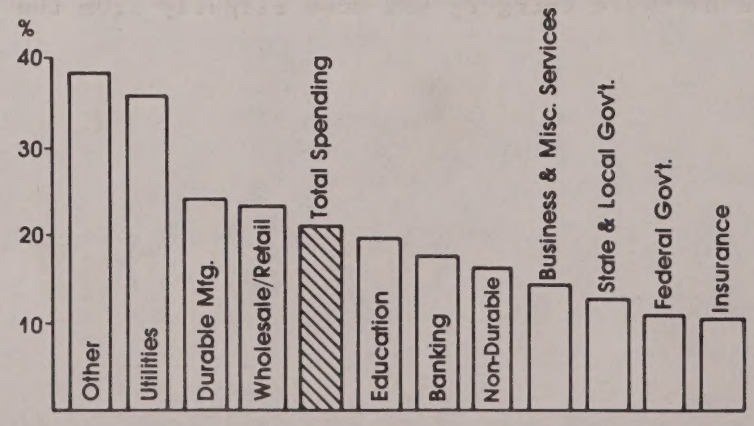


(Copyright 1981 -- International Data Corporation)

fighting to retain their more productive staff and to recruit capable new people, will grow 19% to $31.2 billion, down from last year's 22% rise that totaled $26.2 billion, but still accounting for about 47% of the total budget.

Actually, the fact that staff and overhead expenses have held relatively constant is quite a tribute to the productivity of departments. Scanning through the various positions, the rate of growth in expenses for most stays relatively the same, with a slight dip in data entry and a slight rise in travel and training.

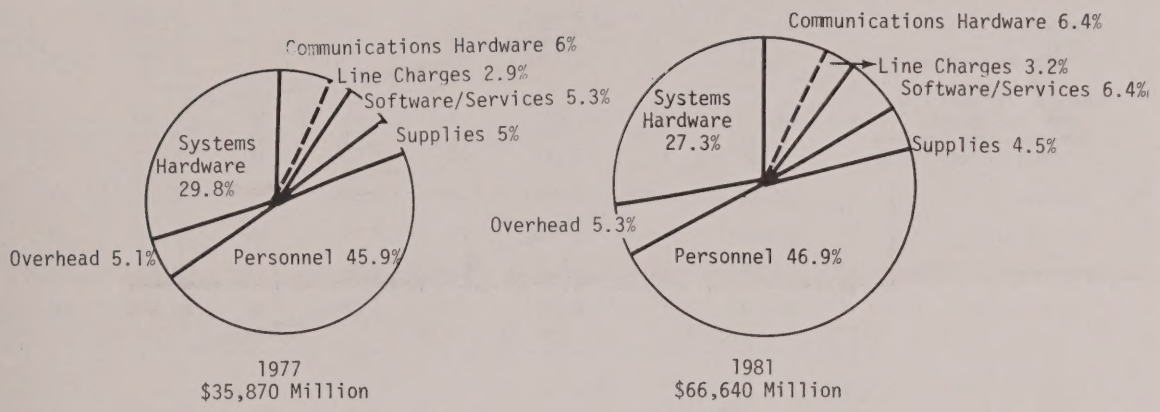
This year, IDC categorized the user responses by industry groupings, and found that utilities will continue its high growth and sport a hefty 30.8% growth in its EDP spending during 1981. Not incidentally, in each of the last five years, utilities' installed base grew faster than all other categories.



(Copyright 1981 -- International Data Corporation)

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

U.S. EDP SPENDING
(Copyright 1981 -- International Data Corporation)



1980 better than expected

A year ago, IDC forecast a 14% rise to $54.2 billion for 1980, but when the dust settled, despite the recession, EDP spending registered a 17% rise with a total of $55.4 billion. Comparing the projected and actual figures, one of the widest misses was on communications expenses, which accounted for only $1.7 billion compared with a forecast $1.8 billion. Perhaps users were overly ambitious in their plans and found implementation took longer than anticipated. However, undaunted, IDC is calling for a 21% jump in communications expenses to $2.1 billion in 1981.

Most of the hardware category was down slightly from the forecast but the sector labeled "data entry, data communication, and other remote equipment showed considerable strength, rising 22% to $3.7 billion compared with a forecast 13% rise to $3.4 billion.

Not a rose garden

Although the 20% growth forecast for 1981 might look downright rosy, one must consider that this rate includes the effects of inflation. IDC suggests using the GNP deflator which shows inflation at about 9%. Nevertheless, by any margin of inflation, the growth should be real.

Users are attempting to stretch their budgets more than usual and are doing such things as increasing their application systems productivity, investing in easy to use report generator packages or nonprocedural languages, and marketing internally developed software.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

U.S. EDP USER SPENDING 1978 - 1981
(Copyright 1981 -- International Data Corporation)

	1978 $M	79/78 %	1979 $M	80/79 %	1980 $M	81/80 %	1981 $M	% of Total Budget
Systems Hardware (excludes communications gear below)	11,895	16	13,755	7	14,650	24	18,130	27.3
Software	1,895	25	2,425	24	3,005	28	3,845	5.7
Services	350	(1)	345	20	415	7	445	.7
Software/Services Subtotal	2,245	21	2,770	23	3,420	25	4,290	6.4
Data Entry, Data Comm. And Other Remote Equipment	2,580	17	3,020	22	3,690	16	4,290	6.4
Communications Expenses	1,255	22	1,530	15	1,760	21	2,130	3.2
Communications Subtotal	3,835	19	4,550	20	5,540	18	6,420	9.6
Supplies	2,000	12	2,240	16	2,605	16	3,015	4.5
Staff Related Expenses	18,620	16	21,560	22	26,250	19	31,250	46.9
Overhead	2,140	18	2,525	19	3,005	18	3,535	5.3
TOTAL BUDGET	40,735	16	47,400	17	55,380	20	66,640	100.0

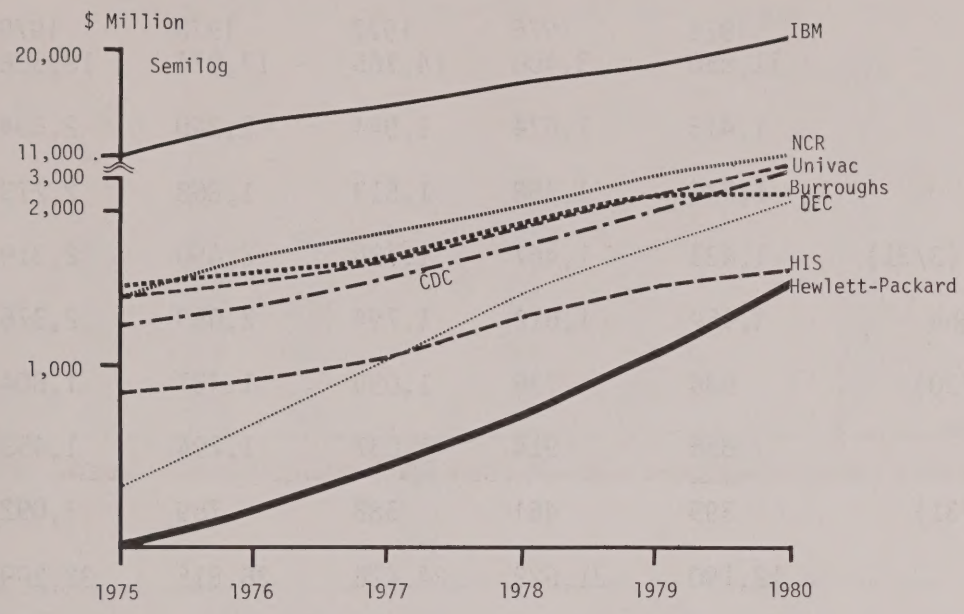
U.S. EDP SPENDING: 1978 - 1981
(Copyright 1981 -- International Data Corporation)

	1978 $M	79/78 %	1979 $M	80/79 %	1980 $M	81/80 %	1981 $M	% of Total Budget
Rental or Lease Payments to Manufacturer	5,815	6	6,165	10	6,755	23	8,310	12.5
Lease Payments to Third Party	1,805	16	2,095	25	2,620	21	3,170	4.8
Depreciation Charges for Purchased equipment	2,580	22	3,160	0	3,160	16	3,655	5.5
Capital Expenditure for Expensed Purchases	550	60	880	(30)	615	80	1,105	1.7
Maintenance Charges on Owned Equipment	1,145	27	1,445	3	1,500	26	1,890	2.8
Systems Hardware Budget Subtotal	11,895	16	13,755	7	14,650	24	18,130	27.3
Data Entry, Data Communication, and Other Remote Equipment -- Not Included Above	2,580	17	3,020	22	3,690	16	4,290	6.4
All Hardware	14,475	16	16,775	9	18,340	22	22,420	33.7

The trend for 1981 and future years will be one of developing corporate-wide information management strategy, as reality dawns on companies that managers and professionals can benefit by information appliances on their desks that are easy to use and that also count as corporate expenditures. There will continue to be increased emphasis on what is 1980's and probably 1981's most overused term, "productivity," as well as expanded spending for software, communications and staff.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

INFORMATION PROCESSING REVENUES -- LEADING MANUFACTURERS 1975 - 1980
(Copyright 1981 -- International Data Corporation)



HARDWARE VENDORS MANAGE GOOD SHOWING
WITH EARNINGS OUTPACING REVENUES IN '80

As a group, the leading vendors of information processing equipment managed to turn in financial reports for 1980 that usually didn't reflect the general malaise felt more strongly by other industries. In fact, at least half of the top 10 showed their pretax earnings for calendar year 1980 rising at a faster rate than their revenues -- a pretty desirable characteristic in light of the high money costs. Actually, although some in the industry were alarmed last year at the relatively slow pace of earnings progress at Amdahl, others thought this a bookkeeping feat engineered intentionally.

However, despite the overall rosy picture, there were some blemishes, caused either by growing pains, such as Data General and perhaps Amdahl, and change in management and mangled delivery scheduled, such as at Burroughs. (EDP/IR, Jan. 30). And the year's results as a whole don't indicate the very real pressures of softening orders, especially from Europe, that many manufacturers began experiencing in the December quarter.

Whether this crunch will continue through the year remains to be seen. IDC thinks the improved price/performance will trigger the elasticity factor, thus freeing more dollars for hardware in the U.S. in 1981.

As companies divulge more information about earnings via sectors, reading annual reports and financial statements becomes more fun.

Honeywell Information Systems accounted for 54% of the operating profit of Honeywell compared with 46% in 1979, reflecting some weakness in residential controls and some industrial components markets. In addition, Honeywell got a fourth quarter boost from equity earnings of its associate Cii-Honeywell Bull.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

INFORMATION PROCESSING REVENUES -- LEADING MANUFACTURERS
(Million Dollars)
(Copyright 1981 -- International Data Corporation)

	1975	1976	1977	1978	1979	1980
IBM	11,850	13,400	14,765	17,074	18,338	21,367
NCR	1,415	1,674	1,944	2,240	2,634	2,951
CDC	1,246	1,358	1,513	1,868	2,273	2,791
Univac (3/31)	1,433	1,467	1,726	2,050	2,319	2,700e
Burroughs	1,457	1,612	1,794	2,083	2,376	2,413
DEC (6/30)	534	736	1,059	1,437	1,804	2,368
HIS*	856	914	1,037	1,294	1,453	1,634
HP (10/31)	399	461	588	769	1,092	1,546
TOTAL	19,190	21,622	24,426	28,815	32,289	37,770
IBM %	61.7	61.9	60.4	59.3	56.8	56.6

* excludes Cii-Honeywell Bull revenues of $1,486 million; Honeywell holds a 47% interest in Cii-Honeywell Bull.

At Big Blue, the trend during 1980 was to reduce its working capital bundle which some have called almost embarrassingly large. IBM did a pretty good job of whittling its working capital down -- a whole billion, from $4.4 billion at the start of the year to less than $3.4 billion. But after all, what's a cash stash for other than to lessen borrowings when funds are costly?

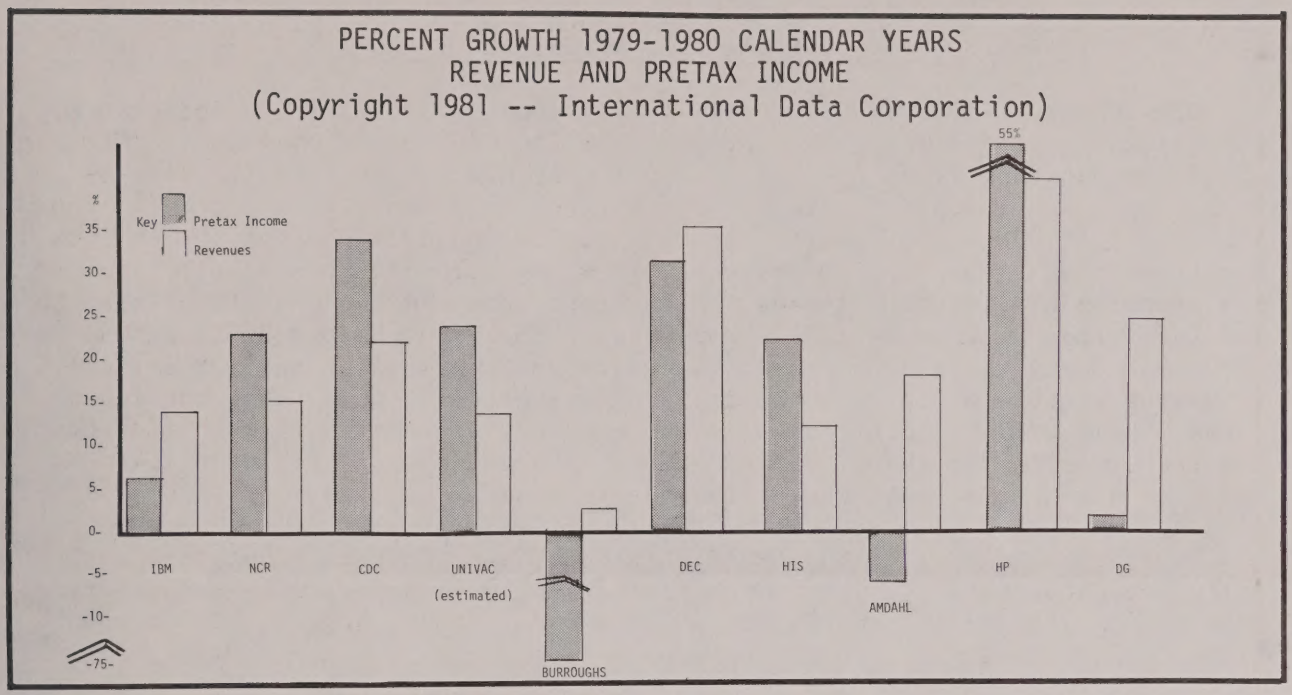
One reason for the drain was increased capital spending -- up 27% for plant and property -- to a total of $6.6 billion. A mere 4 million square feet were completed in 1980 with another 8 million underway at year end. To those who may have blotted from their mind the size of the Giant, here's a reminder: IBM's 1980 research and development budget totaled $1.5 billion, up 11.7% from that of 1979.

There was quite a discrepancy in pretax and net earnings results for the year, as IBM was helped considerably in the latter category by foreign currency adjustments of $24 million credit. In 1979, IBM suffered a $52 million debit on that item. IBM net for 1980 rose 18% to $3.56 billion while pretax earnings rose only 6.2% to $5.9 billion. Total revenue rose 15% to a hefty $26.21 billion.

On a corporate basis, IBM's rental and service revenues rose 14% compared with a 15% hike in outright sales. Within the DP segment, the trend toward purchase was even more pronounced, a 20% jump compared with an 8% rise in rentals. The yearend backlog established a new record high.

And DP services continued to be the fast rising star, posting a 33% increase in revenues during 1980, following a 30% rise in 1979. However, the

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**



cost of services in 1980 also rose rapidly, up 31.7% compared with 13% in 1979. Most of the services revenues here came from maintenance contracts.

But the office products segment experienced "reduced earnings." IBM said this sector was "affected by the tight economy pervading much of the world in 1980. Although gross income grew by $286 million, an increase of 7.4% over 1979, it was not sufficient to offset the increased costs and expenses. The mix of products shipped, expenses associated with new products, and the effects of inflation were contributing factors."

IBM makes no bones about its intentions. "Our goal is to be the most efficient designer and manufacturer, the most efficient marketer and the most efficient servicer of information products." Doubtless there will be more install-it-yourself machines of the 1301 ilk as well as more emphasis on fix-it-yourself via the hot lines and remote diagnostics.

An area of growth within IBM that doesn't appear so neatly segmented involves program products. In the text of its annual report, IBM indicated "software distribution to customers in the U.S. and 32 other countries expanded by 25% in 1980. The IBM Program Information Department . . . distributed programs on some 3 million diskettes and 600,000 reels of tape.

CDC must have been smiling all the way to the bank last year. Its computer business volume increased 23% to $2.8 billion in 1980 (remember, its peripherals business did over $1 billion in business that year) with sales revenue up 28% and rentals and services revenues up 17%. And the computer segment got the primary credit for the corporation's 21% earnings rise to $150.6 million from $124.2 million in 1979.

CDC's computer sector reported earnings of $92.5 million compared with $70.8 million in 1979 although CDC didn't break this down further into various sectors such as the service bureau operations, peripherals, CDC mainframes and plug compatible processors and peripherals. EDP/IR has a hunch that peripherals is an amazingly large portion of the business.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

• OPM SCANDAL LEAVES INVESTORS WARY. The roof is caving in on lessor OPM, which somehow always managed to present the low bid for DP equipment. OPM has filed for bankruptcy, as did Itel. Apparently OPM was padding its list of installed gear when appealing to investors for more funds. When customers found that the list OPM had of gear at their installation didn't match the physical machines, the jig was up. One reason OPM managed to bid consistently low was its practice of long term leases, which users accepted because OPM offered to reimburse them if they wanted an early out. Now with cheaper 303Xs and 4300s 4300s and super cheap 370s available, users are wanting out and OPM evidently is having trouble making good on its promises of early outs. The ramifications likely will be much more scrutiny not only of leasing firms but of how manufacturers handle their leasing paper. Charges against OPM were filed as early as a year ago, with recent charges reportedly in excess of $100 million.

• UNDAUNTED, A NEW LEASING COMPANY SPRINGS UP in the form of Western Technology Investment, Inc., led by some folks from Magnuson with some funds from Gene and Carlton Amdahl and Raymond Williams Jr., among others. The company plans to provide lease programs to manufacturers.

• SOFTWARE GETS SOME RESPECT from the U.S. Supreme Court in its decision that a process or a machine is patentable even though it involves a computer program. The court indicated that the process as a whole must be considered. The Supreme Court approved two appeals for patentability: the Diamond vs. Bradley case involved a Honeywell Level 64 that could operate either as a business model or a scientific model; the Diamond vs. Diehr decision involved a Federal Mogul process pertaining to the manufacture of rubber. In the last case, the court ruled that a process could qualify for patent protection regardless of the novelty of any single element.

• DISCOVISION LINKS VIDEODISCS AND COMPUTERS -- In efforts to sell its players to computer vendors, Discovision is offering an upgraded industrial player with faster access time, more programming capabilities and interfaces to several computer formats. The industrial player is equipped with an onboard microprocessor complete with erasable programmable read-only memory (Eprom) that facilitates branching to new locations to accommodate updated data. Users can access desired frames via a remote keypad. Stringing several disks together is possible via an additional, outboard microprocessor. The player can interface directly to computers or via an interface that handles several communications formats. The player costs $2,475 in single quantity and the interface $225.

• NEW "EXPERIMENTAL" IBM CIRCUIT combines best of both worlds. The Konian-Walsh circuit has switching speeds faster than emitter-coupled logic but with the low power level and cell size of transistor-transistor logic. The circuit has two independent branches -- for logic functions and for capability to drive the signal.

• CCIA, OTHERS REQUEST MORE TIME TO FILE briefs in its appeal of the Federal Communications Commission's Second Computer Inquiry decision. Other intervenors also wanting another 60 days include the Independent Data Communications Manufacturers Association Inc. (IDCMA), North American Telephone Association (NATA), MCI, Xerox, and the American Newspaper Publishers Association.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

EDP industry report

• THE INTERNATIONAL DATA CORPORATION'S NEWSLETTER FOR EXECUTIVES CONCERNED WITH THE ELECTRONIC DATA PROCESSING INDUSTRY

"THE GRAY SHEET"

MOLLY UPTON,EDITOR FEBRUARY 26, 1981 • VOL.16,NO.20 P.J. McGOVERN,PUBLISHER

A look at pricing trends 1978 - 1980

VENDORS FLATTEN HARDWARE PRICE DIFFERENCES VS IBM 4300S; INTERESTING MOVES IN SOFTWARE

The dust has pretty well settled from the bomb that IBM dropped in the form of the 4300 series, and the other mainframers have revamped their lines with a resultant higher degree of price competitiveness across the board.

The scene of the action has moved to the software pricing front, including the area of maintenance. EDP/IR surveys hardware prices and software license and maintenance costs for systems in the 4331-2 through 4341-2 range.

A review of charts depicting prices from the past couple of years shows the dramatic price reductions from the days of the 370s in 1978, when the price of a 370/148 with 2 Mbyte, CPU, standard channels, and console cost over $600,000. As of December, 1980, the 4341s cost between $261,000 and $413,760 for one equipped to handle ECPS/VM 370. Vendors are racing to raise prices -- IBM's norm now is six months -- so EDP/IR bases all observations on prices as of the end of 1980, when everyone had a current price schedule in effect. Some observations for further perusal:

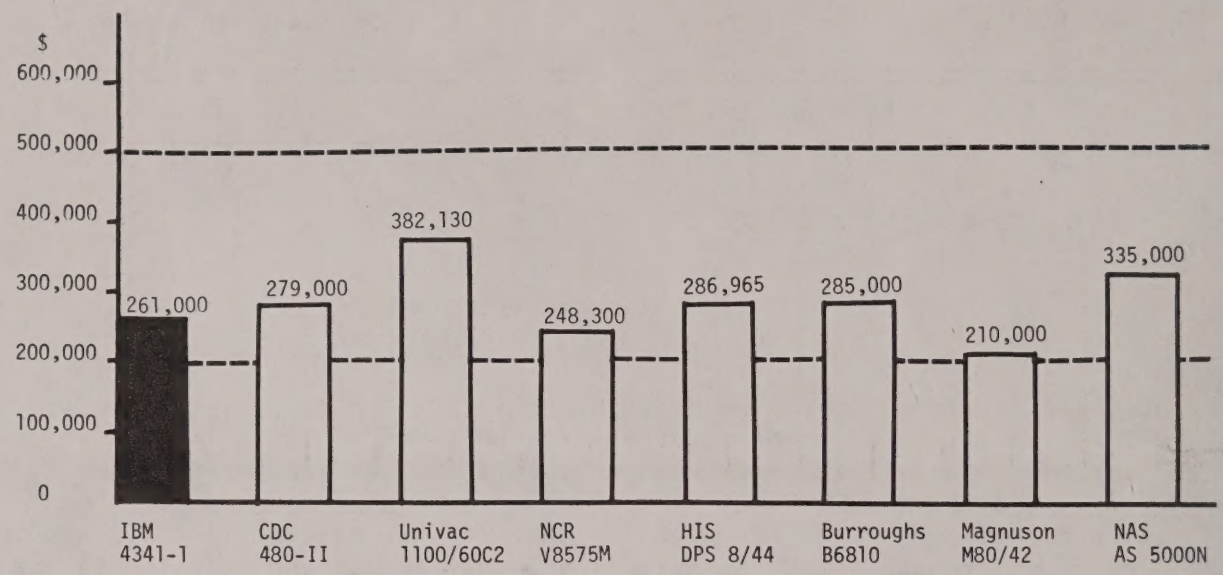
- The price of software and local software maintenance is becoming an increasingly important factor. For instance, these costs can range anywhere from 3% to 24% of the hardware lease price for a year. EDP/IR used bare bones CPU, 2 Mbytes memory, standard channels and console for hardware and an operating system and Cobol for software.

- In the 4341 range, there are only two systems below IBM's price, as was the case in 1979. The price range has condensed considerably, with the highest bidder, Univac, being only $120K above IBM's ticket price. In 1979, National Advanced Systems was stuck with an embarrassingly high price of $350,000 above IBM's.

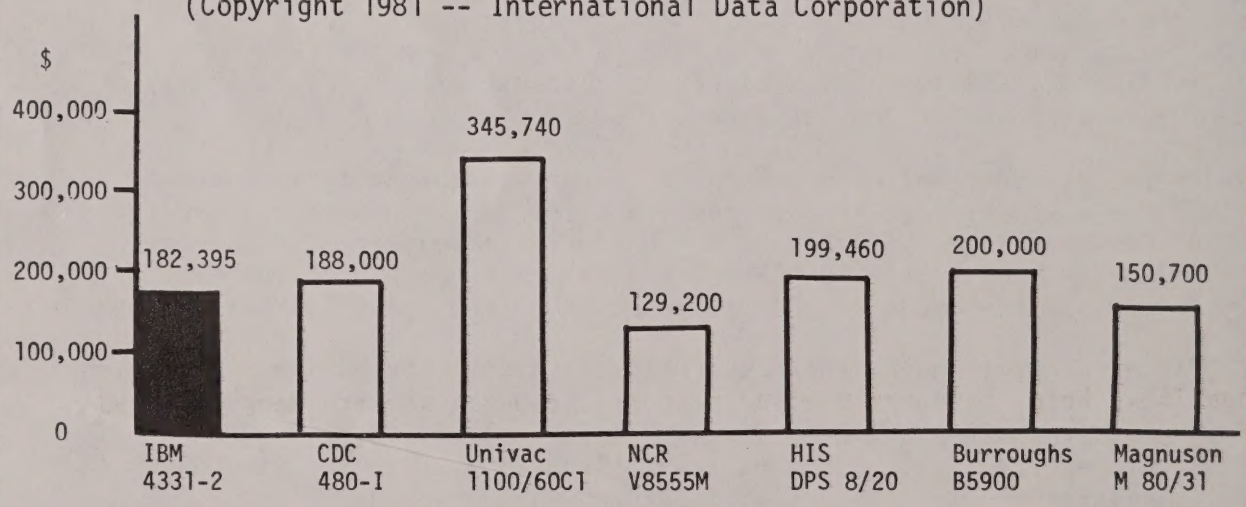
- Vendors were doubtless relieved that IBM introduced a higher ticket item, the 4341-2, and some found their existing systems, such as NCR's V8585M made a better price comparison with that. CDC, which brought out its line of Omegas vs 370s, found that happily its 480-III was price competitive with the 4341-2.

EDP Industry Report is published in annual volumes of twenty-four issues each by International Data Corporation, Post Office Box 915, 214 Third Avenue, Waltham, MA 02254. Entire contents ©1981 by International Data Corporation. **Director,** James Peacock; **Editor,** Molly Upton; **Census Editors,** Paul Arabasz, Lloyd Cohen; **Contributing Editors,** John Gantz, Jack Hart, David Moschella, David Terrie, Nancy Scull; **Circulation Manager,** Mary M. Trayte. Patrick J. McGovern, Chairman, International Data Group. John P. Breyer, President, International Data Corporation. Editorial ideas and information are researched and formulated by the editorial staff. Information and opinions in each issue are based on the best information available, but their accuracy and completeness cannot be guaranteed. **Subscriptions:** One year, $245; three years, $590. Single copies priced as indicated on inside pages. Prices for multiple copies on request. Reproduction without written permission is completely forbidden. Telex 92-3401; Telephone **617/890-3700.**

PURCHASE PRICES OF MACHINES COMPETITIVE WITH
IBM 4341-1, 4341-2 (2M BYTES)
DECEMBER, 1980
(Copyright 1981 -- International Data Corporation)



PURCHASE PRICES OF MACHINES COMPETITIVE WITH
IBM 4331-2 (2 MBYTES)
DECEMBER, 1980
(Copyright 1981 -- International Data Corporation)

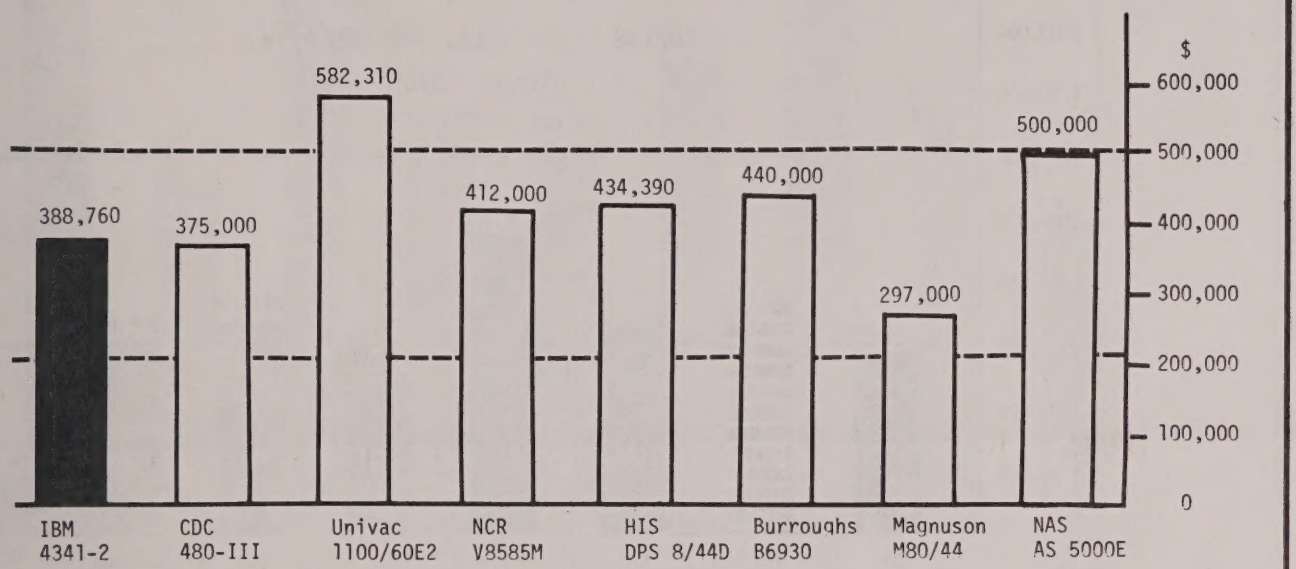


Above are purchase prices of bare bones systems. On pages 6 and 7, EDP/IR tracks several other factors such as software license and local maintenance of software because now more than ever, hardware is an increasingly small part of the total operations cost.

Although vendors are promoting remote, over-the-phone discussions as an alternative to on-site software maintenance, EDP/IR tracks the price of local service as it suspects vendors plan to increase the service portion of their revenues, perhaps to compensate for hardware margins.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

PURCHASE PRICES OF MACHINES COMPETITIVE WITH
IBM 4341-1, 4341-2 (2M BYTES)
DECEMBER, 1980 - (Continued)
(Copyright 1981 -- International Data Corporation)



These charts and the accompanying tables on pages 6 and 7 are intended for price comparison purposes only and do not make judgments about performance. Vendors were asked what they would bid against IBM 4331-2, 4341-1 and 4341-2 configured with the following:

- Hardware -- 2 Mbyte, CPU, standard channels and console
- Software -- 4331-2 and 4341-1 have DOS/VSE, Advanced Function, and Cobol while the 4341-2 has MVS, MVS/SP-2 and Cobol.

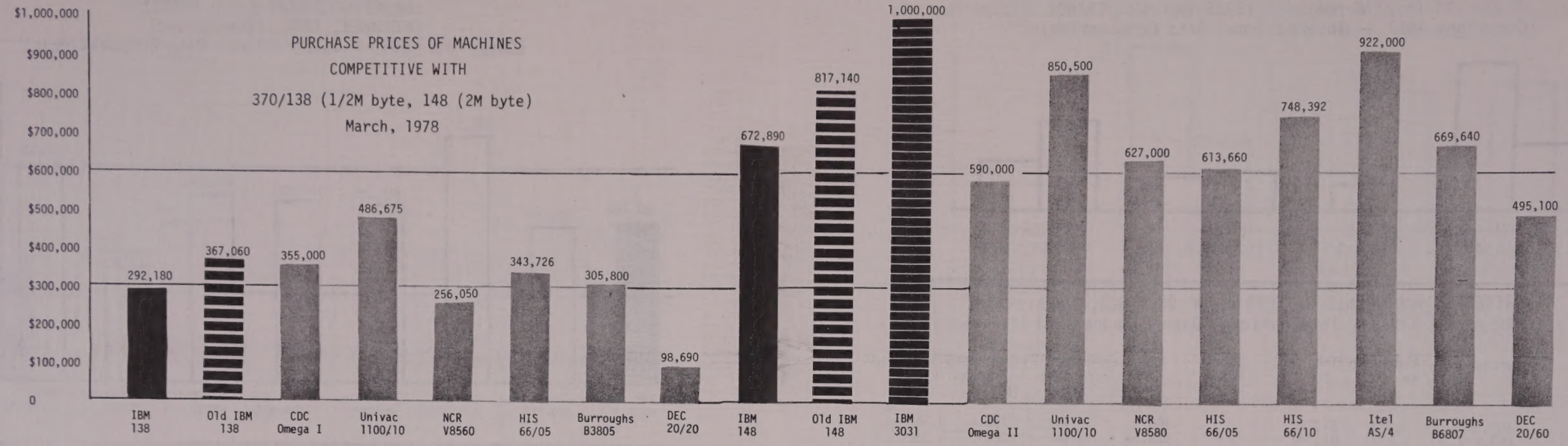
But it's not easy to fit all the vendors into the same round hole. For instance, Burroughs' software includes everything needed to run a system: operating system, all utilities, data communications, and a compiler. In reality, a spokesman said Burroughs' software is very competitively priced against IBM as Burroughs usually underestimates all the IBM software needed.

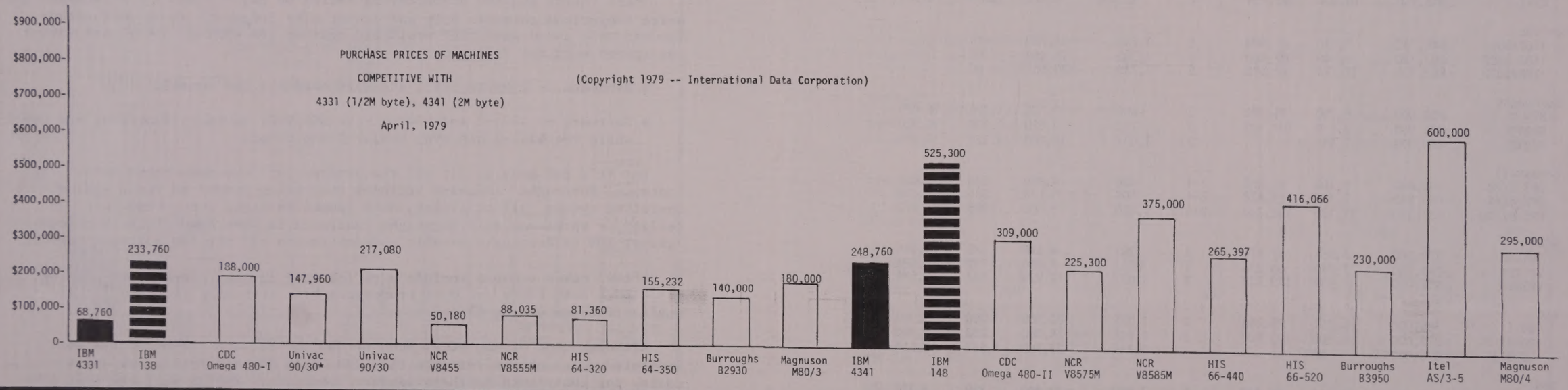
Often, other vendors include more features in their bare bones pricing than IBM. Note there are dual processors bid, such as with Honeywell and NCR's offerings vs the 4341-2.

Although some of the PCMs, such as CDC and National Advanced Systems, indicated users obtain software from IBM, this doesn't really cut users' costs, nor contribute to these vendors' revenues. EDP/IR suspects that PCMs in the game for the long haul are fast developing their own software enhancements and look alikes.

One PCM, Control Data, said it doesn't charge for local service, within reason, citing relatively small demand because its users tend to stick with the older operating systems. But CDC's Omegas were intended to compete versus the 370s, in contrast with other PCMs who have targeted the 4300s and DOS/VSE and MVS/SP-2 and ECPS/VM 370.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**





All prices are for CPU, memory, console and power supply. IBM compares 4300s with the 370/115 and /138, but at the same time indicates their power is in the range of the 138 and above that of the 148. The top chart (March, 1978), shows the downward pricing trend. Many PCMs see lack of prompt 4300 deliveries as a factor in their favor and apparently are pricing their offerings vs. the 148, 138 rather than vs. the 4300s. Current 138, 148 prices are for comparison. The charts do not consider performance factors.

* Price of a 262K 90/30; Univac feels this is sufficient vs. a 512K 4331.

**Price of 4300-type machines from Magnuson (upgrades from /3 and /4) are:

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

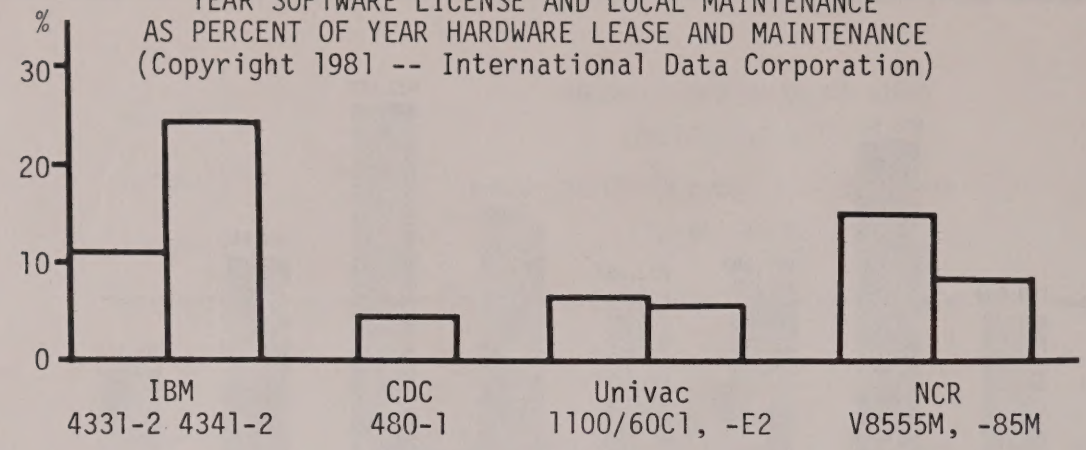
/32, $185,000; /42, $275,000; /43, $315,000.

Digital Equipment declined to proffer systems, citing lack of 4300 benchmarks. In an interactive environment, DEC said it might bid 11/34 to 11/70.

Most vendors' maintenance on purchased and leased machines includes nine hours a day, five days a week, between certain daytime hours. IBM now bases its 4300 maintenance charges for rental, lease and purchase systems on the above scheme; users pay 39% of the base rate for 24 hour/day, 7 day/week coverage. But with the advent of remote diagnostics and the 24 hour/day consultation service, there should not be as much need for on-site help.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

YEAR SOFTWARE LICENSE AND LOCAL MAINTENANCE
AS PERCENT OF YEAR HARDWARE LEASE AND MAINTENANCE
(Copyright 1981 -- International Data Corporation)

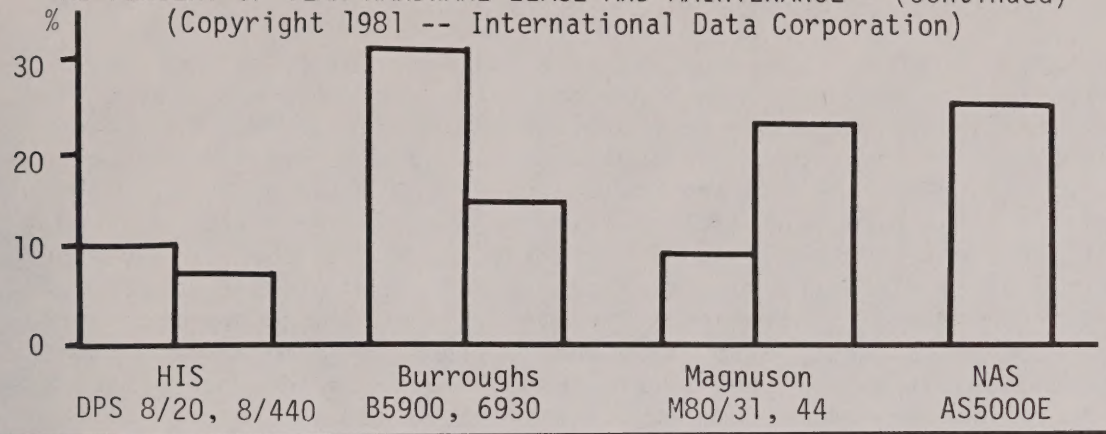


PRICES OF BARE BONES SYSTEMS AS OF DECEMBER, 1980
(Copyright 1981 -- International Data Corporation)

CPU	Purchase	Lease & Maint. Mo	Lease & Maint. Year	Term Years	Hardware Maint. 9 Hours/5 Days Month	Hardware Maint. 9 Hours/5 Days Year	Operating Sys. Cobol Lic. Mo	Operating Sys. Cobol Lic. Year
IBM								
4331-2	182,395	5,149	61,788	2	286	3,432	280	3,360
4341-1	261,010	6,812	81,744	2	578.50	6,942	280	3,360
4341-2	388,760	10,207	122,484	2	831.50	9,978	1,547	18,564
Univac								
1100/60C1	345,740	7,750	93,000	5	1,230	14,760	NC	-
1100 60C2	382,130	8,540	102,480	5	1,330	15,960	NC	-
1100/60~2	582,310	12,724	152,688	5	1,739	20,868	NC	-
Burroughs								
B5900	200,000	6,250	75,000	3	600	7,200	1,335	16,020
B6810	285,000	8,610	103,320	3	710	8,520	1,335	16,020
B6930	440,000	12,840		3	1,017	12,204	1,335	16,020
Honeywell								
DPS 8/20	199,460	5,490	65,880	2-4	400	4,800	636	7,632
DPS 8/44	286,965	7,456	89,472	2-4	509	6,108	845	10,140
DPS 8/44D	434,390	11,395	136,740	2-4	1,000	12,000	986	11,832
NCR								
V8555M	129,300	3,956	47,472	3	381	4,572	132	1,584
V8575M	248,300	7,519	90,228	3	655?	7,860	132	1,584
V8585M	412,000	12,459	149,508	3	1,077	12,924	132	1,584
CDC								
480-I	188,000	6,267	75,204	3	1,925	23,100	280	3,360
480-II	279,000	9,300	111,600	3	2,165	25,980	280	3,360
480-III	375,000	NA			2,315	27,780	1,547	18,564
NAS								
AS5000N	335,000	7,150	85,800	2	1,800	21,600	280	3,360
AS5000E	500,000	8,400	100,800	2	1,900	22,800	1,547	18,564
Magnuson								
M80/31	150,700	4,872	58,464	2	326	3,912	280	3,360
M80/42	210,000	6,543	78,516	2	450	5,400	280	3,360
M80/44	297,000	9,154	109,848	2	465	5,580	1,547	18,564

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

YEAR SOFTWARE LICENSE AND LOCAL MAINTENANCE
AS PERCENT OF YEAR HARDWARE LEASE AND MAINTENANCE - (Continued)
(Copyright 1981 -- International Data Corporation)



PRICES OF BARE BONES SYSTEMS AS OF DECEMBER, 1980
(Copyright 1981 -- International Data Corporation) - (Continued)

CPU	Local SW Maint. Month	Local SW Maint. Year	Year SW Lic./Local Maint. as % Purchase	Year HW Maint. as % Purchase	All Maint. as % Purch.	Remote Diag.	MP Abil.	$ Mbyte
IBM								
4331-2	280	3,360	1.8 / 1.8	1.8	3.6	Yes	No	15,700
4341-1	499	5,988	1.3 / 2.3	2.6	4.9	Yes	No	15,700
4341-2	927	11,124	4.7 / 2.9	2.5	5.5	Yes	No	15,700
Univac								
1100/60C1	550	6,6000	0 / 1.9	4.3	6.2	Yes	No	30,475
1100/60C2	550	6,600	0 / 1.7	4.2	5.9	Yes	No	30,475
1100/60E2	750	9,000	0 / 1.5	3.5	5.0	Yes	Yes	30,475
Burroughs								
B5900	633	7,600	8 / 3.8	3.6	7.4	Future	Yes	26,056
B6810	633	7,600	5.6 / 2.7	3	5.7	Future	Yes	53,414
B6930	633	7,600	3.6 / 1.7	2.8	4.5	Future	Yes	32,570
Honeywell								
DPS 8/20	NC	-	3.8/0	2.4	2.4	Yes	No	17,250
DPS 8/44	NC	-	3.5/0	2.1	2.1	Yes	Yes	17,250
DPS 8/44D	NC	-	2.7/0	2.8	2.8	Yes	Yes	17,250
NCR								
V8555M	495	5,940	1.2 / 4.5	3.5	8	Yes	Yes	22,260
V8575M	627	7,524	.6 / 3	3.1	6.1	Yes	Yes	22,260
V8585M	957	11,484	.3 / 2.7	3.1	5.8	Yes	Yes	22,260
CDC								
480-I	NC	-	1.8 / 0	12.3	12.3	Yes	No	30,000
480-II	NC	-	1.2 / 0	9.3	9.3	Yes	No	30,000
480-III	NC	-	4.9 / 0	7.4	7.4	Yes	No	30,000
NAS								
AS 5000N	600	7,200	1.0 / 2.1	6.4	8.5	Yes	No	25,000
AS 5000E	600	7,200	3.7 / 1.4	4.6	6.0	Yes	No	25,000
Magnuson								
M80/31	190	2,280	2.2 / 1.5	2.5	4.0	Yes	Yes	15,500
M80/42	360	4,320	1.6 / 2.1	2.6	4.7	Yes	Yes	15,500
M80/44	607	7,284	6.2 / 2.4.	1.9	4.3	Yes	Yes	15,500

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

• DATA GENERAL DECENTRALIZES, creates three new new profit and loss divisions devoted to specific market segments and forms a corporate research and development group. There are now nine profit centers within DG. The move comes after DG has received no small amount of flak concerning its lack of decentralization and after the resignation of two VPs, William Jobe, director of DG's distribution division, and Jeffrey Kalb, engineering VP. Herb Richman becomes heir apparent. As newly named executive VP, he has the new divisions as well as the sales divisions reporting to him. The new divisions' target markets and products are: Information Systems Division, large companies with over $25 million sales, Eclipse, MV/8000 and AOS, AOS/VS-based systems; Small Business Systems Division, companies less than $25 million, CS Cobol, Business Basic and microprocessor-based commercial systems; Technical Products Division, technical products, OEMs, real-time and industrial system builders, labs, Micronova, Nova and scientific Eclipse processors. The divisions have "full responsibility for business planning, marketing, product development and profitability within their assigned areas." The acting head of the R&D function will be President Ed de Castro.

• TANDEM'S SUCCESS BREEDS COMPETITION. It was inevitable that folks would catch on to the success rate compiled by Tandem Computers, which recently showed a 117% increase in earnings for 1980 compared with 1979. While Tandem plans to expand its manufacturing capacity by 80% with two new production facilities in Santa Clara, Calif., and Reston, Va., two groups are ramping up to produce fail-safe systems.

Stratus Computer Inc., Natick, Ma., involves Bill Foster, formerly DG's head of software. Founded June, 1980, most of its hardware types are from DG while most software types have Honeywell Multics experience. Stratus now has received $6.7 million in financing from seven institutional investors including Olivetti.

Another would-be competitor, Synapse Computer Corp., Menlo Park, Calif., also has some ex-DG folks and has received a $1.7 million initial investment, some of that reportedly from the magnate in Colorado, Jesse Aweida.

• STC IS ON A START-UP BINGE. The company seems to be in the lead for the entrepreneur/spinoff award of the year. After initiating private financing for STC Computer Research for the design and production of large IBM-compatible CPUs, STC has financed about 80% of a disk drive media company called Media Technology Corp. in Sunnyvale. Several of its employes are from Verbatim. Plans call for the company to serve as a second source to STC's outside suppliers, such as Dysan.

• TI JUMPS INTO CRT TERMINAL MARKET with the editing Opti 940 which at the top of the line costs $1,895 with quantity discounts available. No less than 16 programmable function keys, 80 or 132 char. lines, split screen, and selectable large characters. Given TI's affinity for bulk production, it should give the DEC VT 100 some competition.

• INTEL CLAIMS 64K RAM IMMEDIATELY AVAILABLE. Intel's 2164, a +5 V only device, is said to be compatible with its future 256K device as well as with its 2118 16K RAM. To ensure availability, the 2164 uses redundant methods -- four extra memory rows and columns that can be tapped if a defect is discovered. Access times range from 150- 250-nsec and 100-unit prices are $81.20 to $52.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

EDP industry report

• THE INTERNATIONAL DATA CORPORATION'S NEWSLETTER FOR EXECUTIVES CONCERNED WITH THE ELECTRONIC DATA PROCESSING INDUSTRY

"THE GRAY SHEET"

MOLLY UPTON,EDITOR FEBRUARY 10, 1981 • VOL.16,NO.19 P.J. McGOVERN,PUBLISHER

GSD Invades DPD Turf -- Page 4

INDEPENDENTS JUMP INTO 3380 DISK MARKET; MEANTIME 3350 RETAINS VALUE

Whither IBM goest, the independents have not been far behind -- at least in announcing compatible products. The disk market is looming as one of the major goldmines. The independents had garnered 33% of the 3350 disk market at the end of 1980, reminding some of the days of the 2314, source of many of the plug compatible manufacturers' suits against the Giant.

Currently, the battle is being fought via press releases and in the laboratories as teams rush to ready their products until they can get a look at the new version of the IBM 3880 controller and the 3380 disk. The 3380 will pack 2.52 Gbytes or four times that of a 3350 at only twice the price.

Deliveries of the 3380 are scheduled to start this quarter, but the bulk of deliveries probably won't start until 1982, thus extending the high value of the 3350. Used 3350s are currently selling at more than 90% of list, and some dealers are saying they are selling for a premium.

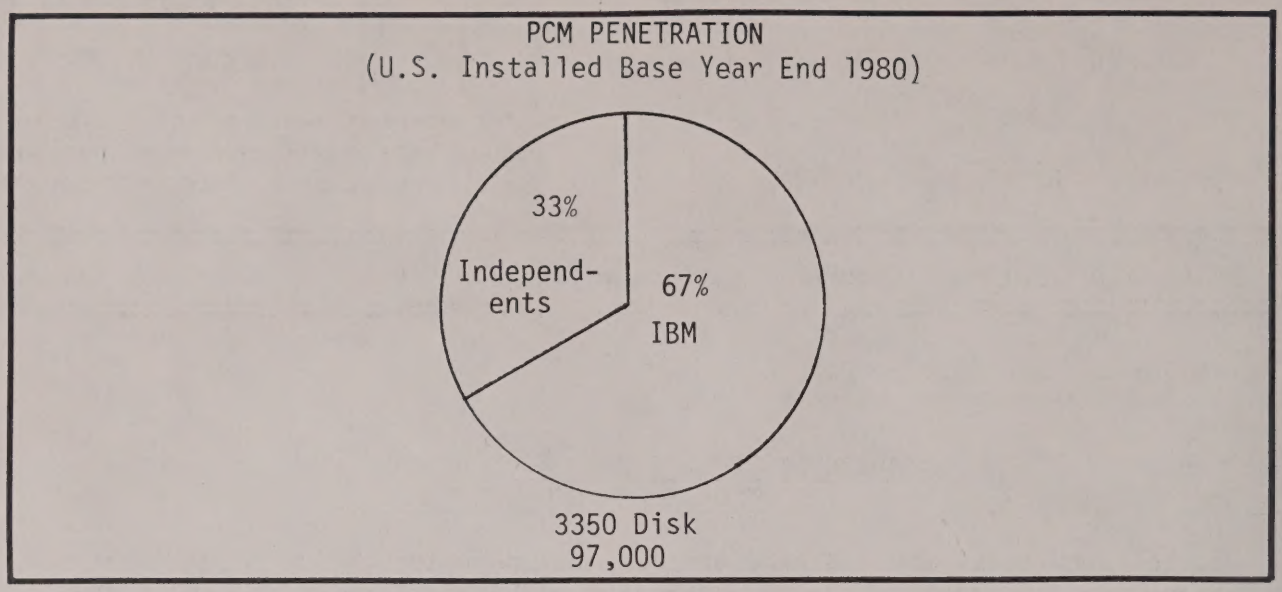
Users unhappy with their assigned deliveries may look to the PCMs for earlier shipments. But shipments of CDC's 33800 and STC's 8380 are scheduled in the second quarter, 1982, which doesn't offer much advantage over IBM deliveries. Memorex, STC and CDC have thrown their hats in the ring.

Although the thin-film head technology embodied in the 3370, 3375 and 3380 disks lends itself to mass production because the heads are produced like semiconductors, the technology level required is quite steep.

To expedite product development, CDC and Memorex have agreed to exchange technical information covering R&D of thin-film heads and head-arm assemblies. The agreement calls for CDC to pay Memorex $750,000 and for both companies to continue their R&D programs.

With every new product, there are some features that will become popular and some that may not. The 3370 was the first IBM disk to embody thin-film heads, which look like the way of the future. But it also tried to blaze the trail with fixed block architecture rather than the stand-by count key data.

EDP Industry Report is published in annual volumes of twenty-four issues each by International Data Corporation, Post Office Box 915, 214 Third Avenue, Waltham, MA 02254. Entire contents ©1981 by International Data Corporation. **Director,** James Peacock; **Editor,** Molly Upton; **Census Editors,** Paul Arabasz, Lloyd Cohen; **Contributing Editors,** John Gantz, Jack Hart, David Moschella, David Terrie, Nancy Scull; **Circulation Manager,** Mary M. Trayte. Patrick J. McGovern, Chairman, International Data Group. John P. Breyer, President, International Data Corporation. Editorial ideas and information are researched and formulated by the editorial staff. Information and opinions in each issue are based on the best information available, but their accuracy and completeness cannot be guaranteed. **Subscriptions:** One year, $245; three years, $590. Single copies priced as indicated on inside pages. Prices for multiple copies on request. Reproduction without written permission is completely forbidden. Telex 92-3401; Telephone **617/890-3700.**



A preliminary IDC survey of current and prospective 4341 users found very limited interest in the 3370. Although STC has indicated plans to be in the 3370 market, its could change its mind when it actually tries to peddle the future product. CDC, for one, plans to focus first on the 3380 market and then work down to the smaller disks.

Inside look

Because the 3380 embodies many of the concepts first seen in the 3370 fixed block architecture device, EDP/IR takes a look at the 3370, as described in detail in a glossy compilation of technical papers entitled "IBM Disk Storage Technology" (GA 26-1665-0) available from regional IBM offices.

The mass production potential can be seen from the description of head manufacture. Film heads, processed by film deposition and photolithographic steps, are deposited on nonmagnetic wear-resistant ceramic substrates which are later sliced up to form individual hydrodynamic sliders. This method eliminates the additional step of bonding individual head elements to separately fabricated sliders.

IBM seems to like microprocessors with lots of microcode -- the 3370 device as well as the one in the 3880 controller, are examples. The 3370 microcode contains the sequential state control functions.

"The key elements of the new microprocessor are fast execution time, a special instruction set, and improved techniques to ensure data integrity. Mixing and partitioning the functions in the microprocessor permitted it to be fitted on only five modules." As an example of the microprocessor's speed, execution time is 480 nsec, of which 280 nsec are used for read only storage access time. The special instruction set enables all instructions to be executed within one cycle.

The 3880 -- smart box

The 3880 has a lot of potential, and many see it becoming the outboard device handling all tape, disk and I/O functions. Alex Cimochowski, vice-president of CDC's Peripheral Systems Division, observed the 3380 box is now

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

PRICE PERFORMANCE: IBM DISK DRIVES
(Copyright 1981 -- International Data Corporation)

Features/Model	3350 A2	3370 A1*	3375 A1	3380 A4
$/MB	$63.40	$71.14	$56.70	$38.75
Purchase (drive only)	$40,000	$40,620	$46,450	$97,650
Capacity (MB)	635	571	819	2,520
Capacity per spindle (MB)	317.5	571	819	1,260
Transfer Rate (MB/sec)	1.2	1.86	1.86	3.0
Average Access Time (msec)	25	20	19	16
Latency (msec)	8.4	10.1	10.1	8.3
No. Head Disk Assemblies	2	1	1	2
Actuators per Spindle	1	2	2	2
Max. Recording Density (Mb/sq. in.)	3.05	7.8	NA	NA
String Capacity (MB)	2,540	2,284	3,270	10,080

* 3370 utilizes fixed block architecture; 20% formatting difference.

half full and has room for four more storage directors. He suspects the 3380 will evolve not as a back end processor but as a controller handling offline staging, dump restore and staging. The next IBM tape drive will probably use the 3880 as its controller, he said. Currently one can put a disk interface on the 8809 tape drive so it can run off a disk controller.

The document states: "Flexibility in controlling different types of devices is obtained by using loadable microcode into the IBM 3880 control store." In addition, "chip input and output levels are compatible with industry standards so that the microprocessor can drive other system components directly." Another new feature is that various microcode loads for different devices incorporate common code, thus providing a device-independent function.

The 3880 microprocessor is a single-chip, bipolar device designed for speed and reliability. "All instructions execute within two machine cycles, allowing the microprocessor to control high-speed data paths in many applications where the data rate is too high for the microprocessor to handle the data directly." There's also a cycle steal mode so "users may easily add external hardware to provide direct memory access (DMA) without affecting the state of the microprocessor." A parallel rather than sequential execution of the SEEK and SET SECTOR commands reduces execution time and the number of connection and reconnection steps between the channel, control unit and disk.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

CDC Disks

CDC claims to be second only to IBM in the number of disks it produces for a wide range of products including CDC computers, Honeywell, the OEM market, and plug compatible mart. The guiding principles are utilizing economies of scale and transfering technology from one product line to another, observed Al Netten, vice-president of CDC's Peripheral Systems Group. During 1980, the group's business, including the Miniperipherals (including Series 1) Division and peripheral systems division, grew about 30% and reached the $1 billion mark, putting it in the middle of the Fortune 500.

By using its own designs rather than simply reverse engineering CDC can add function to products. Its version of the 3350 offers dual access by which there are two paths from each disk to the storage directors, thus ensuring reliability but also offering up to a 10% increase in throughput, Cimochowski said. Since CDC's announcement in 1976, STC introduced its dual port version and Memorex its IDI unit. In addition, CDC has a 635 Mbyte version while IBM's maximum is 317 Mbyte. With the 3380, IBM has a dynamic path selection, by which there is one path for every four disks, thus solving the reliability problem, he observed.

Because it felt somewhat forced to announce its 33800 so far in advance of its delivery, CDC said it will stand on its record of added value and simply indicate it will have a product.

Sometimes following IBM can lead one astray, and CDC missed the boat on tape drives when it focused its energies on mass storage instead. But the MS market never caught on for medium size users and CDC will probably reenter with a streaming tape drive for the H series of IBM processors.

GSD GETS BIGGER SHARE OF IBM TURF;
SERIES 1 CONTINUES TO ADD MUSCLE

The recent barrage of announcements from the General Systems Division relating to communications capabilities on the S/1, S/38, 5520, 5280 has analysts pondering: Are IBM's divisions actually coordinating their efforts according to a strategic master plan? Perhaps "big brother" Data Processing Division (DPD) has actually relented and is allowing its "little brother" General Systems Division (GSD) to share some of its turf.

It may well be the old "if you can't beat'em, join'em" theme. Many users have eyed the S/1 in preference to the 8100. Now, it looks like GSD is paying attention and courting the IBM market in addition to its systems house business. IBM said "the announcement by IBM's General Systems Division was directed primarily at large account customers" (read DPD) "who can use the Series/1 to perform multiple, complex, communications-oriented jobs supporting large numbers of terminals."

Now that the 4300 seems to be selling well, it was time to let the S/38 out of the bag. The GSD sleeper will be endowed with bisynch communications in addition to already announced SNA. It can support up to 80 of the 5250 terminals through the addition of two more workstation controllers ($5,070 each). The number of communications lines was doubled to 8. Pitching for more converts, there is a conversion aid from S/34 to S/38; previously GSD was wooing the S/3 user.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

Some high points of the GSD unveilings:

- A prevalent theme is compatibility with host IBM systems -- whether SNA or bisynch -- a sorely missing link in the case of the S/38. Via bisynch, the 38 can talk to other GSD products such as the 38, 34, 32, 3, Series 1 and 5280, as well as DPD's 370, 3000, 4300 and terminals that use 3741 or S/3 bisynch protocol.

- IBM has replaced the term "original equipment manufacturer" (OEM) with the moniker "value added remarketer" (VAR) and offers a 10% discount even on single quantity Series 1s if the buyer will add value and resell the unit. The top discount remains 20%, but now can be acquired through quantity and/or the VAR discount. As a boost to the VARs, S/1 users can now obtain maintenance from IBM.

- There's a new top and bottom of the Series 1 line; the midrange 4953 was eliminated. Current models include 4952 A,B,C, 4955 C,D,E.F. The 4952C has a built-in diskette drive, minimum memory 32K, four I/O slots, $8,500, shipments start August, 1981. Some configurations show a purchase price and maintenance reduction of more than 20%. Looks like a small, handy unit. There can be dual floppy drives. The 4955F has the same power as the E but double the maximum memory to 512K, $11,550, April, 1981. Memory prices are lower -- .024 cent/byte, not quite down to the 4300 range.

- Looks like we may see Series 1s supporting 200 terminals. Many of the Series 1 enhancements are designed to augment the capability of the S/1 to handle its previous limit of 256 addressable devices. The improvements include: 128K cards on the F; a multifunction adapter fits in one slot and provides four more I/O slots; four more slots in the diskette; and integration into CPU of address translation feature. Some S/1s currently support 40 or 50 terminals.

- More on IBM's ring technology, seen previously with the 5520 administrative system (EDP/IR, Nov.16,1979). Up to 16 S/1s can be connected in a peer-to-peer network on a twinax line that transmits at 2 Mbit/sec and extends nearly a mile between processors. But the separate microprocessor controller that interfaces with the ring ($3,825) and the accompanying communications monitor software ($5,280) add about $8K to the $8K-$11K price of each CPU on a ring.

- There's a printer for everyone -- 40 char./sec to 1,200 line/min including some that can operate at either draft or correspondence quality with extensive paper handling. The matrix printers for S/1 can be as far as 4,000 feet from the CPU -- lots of features that yell "office automation" market to the VARs.

- The 5280 distributed data system was beefed up with more local memory (96K instead of 64K on terminals and 288K instead of 160K on the controller), and a second application microprocessor for multiprogramming environments ($1,190). A free multipoint monitor allows 5280s to be polled without loading a communications program into storage. With 3270 emulation, the 5280s become superintelligent terminals acceptable where 3270s are used -- $6,730 - $9,870 for terminals and $9,855 - $16,695 for controller.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

IBM STATEMENTS OF DIRECTION

IBM's current communications strategy can almost be summed up in the phrase: If you can't offer the customers what they want now, at least tell them you'll offer it later. The recent IBM statement is the second within seven months from IBM. The preamble indicated prospective customers wanted to know just how the 38 would fit their networks.

January 19, 1981: "It is IBM's intent to extend System/38 Systems Network Architecture (SNA) SDLC and BSC communications capabilities by providing SNA Remote Job Entry (SRJE), BSC Multi-Leaving Remote Job Entry (MRJE), and BSC multipoint tributary connection, each with the System/38 functioning as a terminal to a System/370, 3000, or 4300 host system. IBM expects product enhancements supporting these communications capabilities will be announced and shipped over the next three years."

June 17, 1980, regarding communications for office products: "IBM recognizes that many users will require communicaton capabilities to integrate these products into their informaton handling systems. Communications support must be available so that text documents that require filing or transmission can be sent to or retrieved by authorized individuals throughout an enterprise." IBM intends to provide support "over time, for this document interchange capability across the office systems involved in today's announcement."

Communications name of game

Let's look at the specifics of the communication offerings:

3270 compatibility:

- The S/1 can look like 3270 to hosts, and support 3270s (and 3101s) linked to it IF the VAR buys a development system license for the Realtime Programming System/Multiple Terminal Manager Version 2 ($15,000). If this capability is imbedded in the VAR's product, no license is necessary from the end user.

- The 5280 can emulate 3270 either through bisynch or SNA ($35/mo), available June, 1981. The necessary hardware adapter costs $1,885.

Bisynch capability:

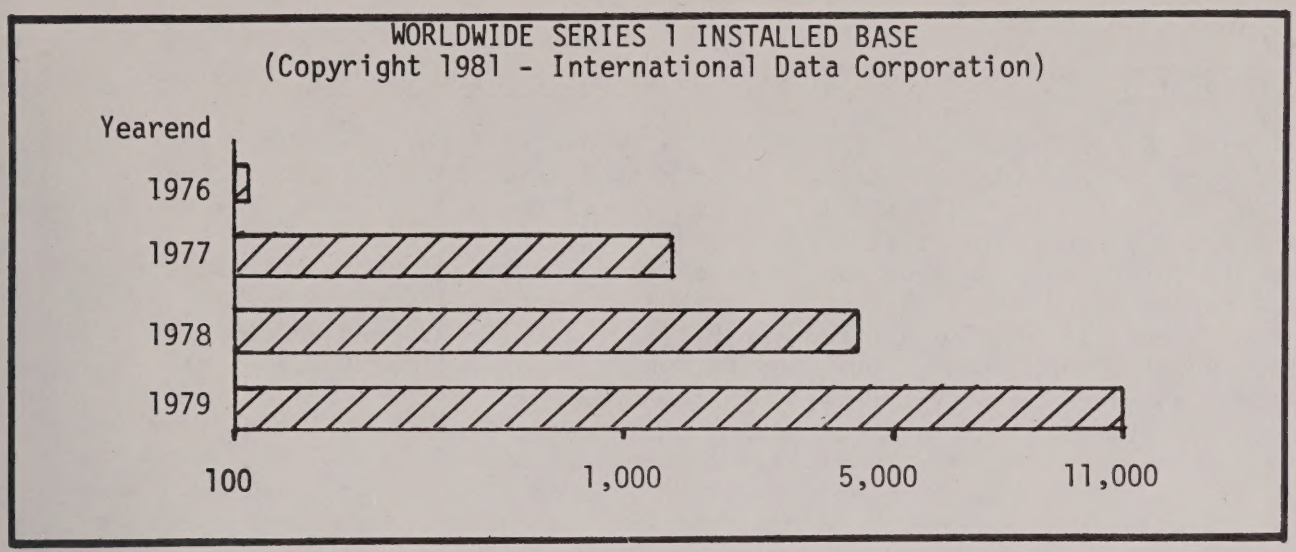
- The S/38 will have bisynch capability in February, 1982, enabling it to talk to other IBM systems. For those who just aren't sold on the SNA route.

SNA/SDLC:

- S/38 will get SNA/SDLC support for it as a terminal to S/370 ahead of schedule: March 1981 instead of June.

- The Series/1 SNA extended support ($2,784), available now, provides a GET/PUT level interface to IMS/VS and CICS/VS applications in the host. Kind of convenient for DDP applications.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**



I/O EXTENDABLE

The Series 1's I/O structure is beginning to look like a tree with lots of branches. The basic 7 slots can be extended quite a bit. Some tools include:

- 4965 diskette drive and I/O expansion unit provides 4 more slots ($5,800, August, 1981).

- Multifunction attachment unit 1310 ($2,100) provides four attachment ports on a single card. (More than 1 can be used on an F.) Can attach any combination of 4975 (new matrix) printers or 3101 terminals; one port can handle remote 3101 or 4975 or bisynch line. MFA can be plugged into any of the basic 7 slots or the additional four in the diskette unit. Looks like GSD is pitching the 3101.

- Memory cards are bigger, 128K, thus consuming fewer slots. And the address translator that took up a slot on the E now is in the CPU -- add another slot available for terminals.

CDC's Series 1 Business Booming

When IBM introduced the Series 1 and vowed to make it an OEM machine, many eager vendors rushed in, but they neglected to perceive the long ramp up period resulting from both the OEM nature of the machine and IBM's relative inexperience in this field and reluctance to discount. CDC, one of the first to offer a broad range of compatible Series 1 peripherals, and one of the few to wait out IBM's learning curve in the OEM/mini business, is now reaping rewards. CDC's section offering products for the S/1 has attained divisional status in recognition of the volume of business, which grew between 200% and 300% in 1980 compared with 1979 and should double in 1981, according to Al Netten, vice-president of the Peripheral Systems Group.

As an example of using big company product development strength, CDC has developed an interface consisting of four chips with 700 gate/chip containing the channel interface, device interface and a microprogrammable part. CDC markets it with its S/1 peripherals. The device cuts the price tag by about half and reduces maintenance costs because of embedded diagnostics.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

• IBM FIRES FIRST SHOT AT RELATIONAL data base with Structured Query Language/ Data Systems (SQL/DS) designed for medium size (VSE) systems including the 4300, 370/138-158, 3031 and 3033S. It seems intended primarily for report generation and inquiry use; IBM stresses DL/1 and IMS continue to be its key offerings for production data base applications. SQL needs 1 Mbyte real storage; 2 Mbytes if CICS/DOS/VS ISQL and/or the extract facility are used. IBM clearly intends to provide similar capabilities for its MVS and VM environments. SQL/DS "complements" DL/1 DOS/VS, which is needed for the extract facility, as is CICS and VSE/Power. The query/report writer function needs CICS and Power also. Although one can transfer data from DL/1, SQL only accepts sequential access method files. It supports only 3270 devices. The basic license is $300/mo with a distributed systems license option of $225/mo. General availability is scheduled for February, 1982; August for early support.

• CONVERGENT TECHNOLOGIES LICENSES ROLM Corp. to manufacture its Series 1000 multifunction workstation with unspecified variations. Rolm also obtained rights to various Convergent (EDP/IR, Nov. 28) software, which was recently expanded to include a Pascal compiler. Not an odd coincidence, Rolm announced data communications features on its Computerized Business Telephone System costing about $600-$650 per connection. Thus it's easy to see Rolm intends to become the one-stop office supplier. Rolm already has text transmission via its Rim system. The Data Communications feature integrates the switching of voice and data simultaneously, thus allowing terminals and phones to use the same wiring. The enhancement consists of an interface module linking terminals to phone wiring, two printed circuit boards and a software package.

• CHANGING MARKETING RULES? Xerox and Sears head to the hinterlands. Xerox, which recently made headlines by its "department store" approach to stores stocking others' products, now plans to market some facsimile and word processing products through office product dealers, systems houses and OEMs. To court this market seriously, Xerox slashed 14% off the partial-page version of its 860 WP system with a lower cost printer. The ticket for the new device: $11,625 with quantity discounts to below $9,900. The previous price with standard printer was $13,500.

Sears plans to open five business machine stores and eventually hopes for a nationwide chain. The gear will range from small business computers to dictation equipment and carry Sears and other labels.

• THE DEC 10 LIVES. More life was breathed into DEC's large systems arena when Digital Equipment Corp. (re)assembled a group known as the Large Computer Product Group, which is responsible for the Decsystem 10 and 20 families. Marketing, long range planning and centralized support services will join with product development. Recently, some of these functions, especially marketing, have been farmed out to other product groups. "Restructuring our LCG organization follows our strategy to reinforce and 'grow' our high-end time-sharing business, and to meet user requirements for future development of 36-bit products," Andy Knowles, vice-president, Technical Group, commented.

• NAS UPGRADES ITS AS/7000 series and hints of an "N" model of its top-of-the line 9000, which also has a dual processor (DPC) version. The AS/7000DPC can have 24 channels, 16 of them data streaming; the new maximum memory is 8M for the 7000N and 16M for the 7000 and 7000DPC.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

EDP industry report

• THE INTERNATIONAL DATA CORPORATION'S NEWSLETTER FOR EXECUTIVES CONCERNED WITH THE ELECTRONIC DATA PROCESSING INDUSTRY

"THE GRAY SHEET"

JANUARY 30, 1981 MOLLY UPTON, ED o P.J.McGOVERN, PUB VOL.16,NO.18

Sony Sets Sights on Office Mart -- Page 6

BURROUGHS HIGHLIGHTS APPLICATIONS SOFTWARE; BLUMENTHAL GETS FEET WET, MAKES A FEW WAVES

Burroughs' new chairman, W. Michael Blumenthal, wandered around the globe for several months checking out his new domain before grabbing the ceo chair and making some changes, most of which involved clearing the decks of unprofitable ventures and habits and putting more emphasis on planning for the future. He intends to fully capitalize on the traditional Burroughs strength of architectural design while also improving its reputation for support and service. Part of the future strategy can be seen through the increased emphasis Burroughs is placing on applications software.

Burroughs' growth path into the '80s will be based on strengthening and expanding its application software offerings, according to Jack Thompson, vice-president of computer products and systems. Burroughs has increased its R&D spending for specific industry applications software as part of its plan to avoid being considered a generalist.

In line with its pitch towards specific industries, some of them old-line Burroughs favorites, Burroughs is designing specialized industry terminals that have functions programmed into a chip, such as the medical terminal with a chip that handles the light pen, thus offloading the CPU. There will be more of these "professional interface" terminals in the future.

It's no coincidence Burroughs is spending $80 million to enlarge its semiconductor facilities at Rancho Bernardo; the medical terminal chip is but one example of its plans for proprietary chips.

Burroughs' recognition of the IBM world is demonstrated in its Burroughs Network Architecture and gateway protocols to other architectures, such as packet switching and IBM's SNA. The first parts of BNA will be available in first quarter for the 6000 series and by midyear on the 7000 series. Currently there are tools to hook into non IBM nets, and BNA can tap into backbones of commercial carriers.

Basically, Burroughs is aiming to develop complex applications and work downward, offering subsets to smaller customers, in a fashion similar to that

EDP Industry Report is published in annual volumes of twenty-four issues each by International Data Corporation, Post Office Box 915, 214 Third Avenue, Waltham, MA 02254. Entire contents ©1981 by International Data Corporation. **Director,** James Peacock; **Editor,** Molly Upton; **Census Editors,** Paul Arabasz, Lloyd Cohen; **Contributing Editors,** John Gantz, Jack Hart, David Moschella, David Terrie, Nancy Scull; **Circulation Manager,** Mary M. Trayte. Patrick J. McGovern, Chairman, International Data Group. John P. Breyer, President, International Data Corporation. Editorial ideas and information are researched and formulated by the editorial staff. Information and opinions in each issue are based on the best information available, but their accuracy and completeness cannot be guaranteed. **Subscriptions:** One year, $245; three years, $590. Single copies priced as indicated on inside pages. Prices for multiple copies on request. Reproduction without written permission is completely forbidden. Telex 92-3401; Telephone **617/890-3700.**

espoused by Honeywell (EDP/IR Jan. 16) Thompson said the subsets will be compatible and users can simply add more modules when they upgrade their CPUs.

With the increased emphasis on software, the recent SDC acquisition takes on additional significance beyond the facts it: is a good fit in government work (one of Burroughs' fastest growing areas); complements Burroughs' two data centers; and has expertise in several areas of interest to Burroughs.

Some of the areas for which Burroughs is fabricating software include finance -- a stronghold from long ago -- manufacturing, health, distribution and several others. Burroughs has been working in health care since the late 1960s, and now has about 11 major modules completed and plans another 20 to 30.

In sales to the distribution area, the 5900 is key, since it spans the line between medium and large systems and is compatible with the operating systems of larger CPUs. When a user upgrades his hardware, some modules in the distribution system are the same and some are replaced, but in all cases they use the same data base.

Burroughs has taken pains to provide flexible report generators and other tools to allow the user to get the specific information in desired formats. To woo other users, Burroughs has conversion aids from HIS and IBM systems.

Thompson indicated that the percentage of new users was higher in 1980 than in any previous year. Large systems sales held up during 80, and Thompson thought new business as a percentage of the total increased. He said Burroughs small systems had tremendous growth in 1980 over 1979.

Burroughs had a negative

Burroughs broke tradition and showed a loss for the fourth quarter after a special charge of $125 million. Before the charge, Burroughs fourth quarter earnings were down to $56 million compared with $132 million in the same period a year ago. For the year, earnings dipped drastically to $82 million compared with $305 million last year. Revenue grew slightly to $2.9 billion from $2.8 billion in 1979. Sales revenue decreased 1% while, harbinger of future trends, rental and service revenue rose 7%.

Shipments

Burroughs admits freely that it had extensive problems in meeting shipment deadlines and quotas in 1980; all except the B3950, which is still on indefinite hold because throughput isn't up to specification, seem to be worked out. The 1900 is being delivered in large volume now from three plants; volume shipments for the 2900 started last summer; the 5900 second quarter, 1980 and the 6900 the fourth quarter, 1980. Two more members of the family will be the 4900 and the 7900. Blumenthal indicated the 3950 problems will not impact the 4900's shipment schedule.

Perhaps there were too many new products at one time, he opined. Terminal unit production rose 65% above that of 1979, while the 1000 series was up 75% in units produced. There was a "huge" increase in production of B90s and the S 3000 (the line of document management systems largely used by banks) rose 40%. All factories trying to get that kind of steep ramp in one year wasn't without glitches, Blumenthal observed.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

"In the past, Burroughs may have been too profitable," Blumenthal remarked in reviewing the steps initiated to organize Burroughs as the large company it is. Blumenthal indicated his priorities will be focused on asset management and judging the company on return on assets and net assets as opposed to a "fatal fascination with per share earnings that in hindsight probably didn't maximize profitability and growth in the long run." In many areas Burroughs has been using assets inefficiently and cash too liberally, he added.

Service, delivery

Another thrust is improving Burroughs service and support efforts to the point where the company may be known as much for its services as it is for its architectural features. Also, product distribution leaves something to be desired, he added. Blumenthal took credit for a program said to have begun before he came aboard, namely, ceasing partial shipments to customers and giving purchase and lease customers equal order priority.

Burroughs is setting up staging centers where a complete system to be delivered will be checked out prior to delivery. Apparently this was not done in many cases.

NEW FACES

There's new blood at Burroughs. Chairman Mike Blumenthal brought with him his chief Bendix Corp. honcho, Jerry Jacobson, now Burroughs vice-chairman for strategic planning, and replaced Lloyd Cali, who opted for early retirement, with Paul Stern as executive VP of engineering and manufacturing. Stern is recently from Rockwell and also had extensive experience at IBM. The newest member is Thomas E. Winter, executive VP of finance and administration, formerly VP operations for Xerox's Information Products Group. Blumenthal said the team should be complete in three or four months.

Can outsiders run a computer company? That's what some attendees at a New York meeting of securities analysts were wondering. But when Blumenthal assumed the reins September 25, Burroughs was a pretty sound company, albeit with some problems in the support and service areas, and EDP/IR has no doubt that Blumenthal can make some improvements. He might just be able to take a global view of the industry and not let Burroughs pride stand in his way. Perhaps we'll see Burroughs working on some sort of bridge to IBM compatibility, although both Thompson and Blumenthal emphasized applications software as the forte in the foreseeable future.

Jacobson's first move was to acquire Systems Development Corp., which is now safely within the fold. Blumenthal hinted that there may be more acquisitions.

Interestingly, an SDC alum, Roger Johnson, has been given the job of getting Burroughs' office automation efforts (or lack thereof) back on the track. Johnson was president of the Products Group at SDC. Whether it's window dressing remains to be seen, but the Office Automation Division's reporting structure has been redefined to give emphasis to that area. The OAD now reports to Diversified Products executive vice-president Don Young, who also has the OEM and federal systems operations under him. These areas are termed high growth potential. Previously the office area reported to the Office Products Group, which included business forms.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

Blumenthal said Burroughs didn't ship a significant amount of product in 1980, because of the switchover in procedures; however, he assured analysts that there won't be a "bubble" of revenues in 1981. The delay in shipments is one reason why the backlog is up, he added.

Systems and procedures within the company were inadequate for the needs of a large corporation, he indicated. Part of the job involves coordinating efforts of extremely bright people scattered about the company, he indicated. The personnel policy was underdeveloped for a large company that wishes to grow a lot larger, Blumenthal continued. Basically Burroughs plans more management training programs and other inducements to develop its own personnel.

Strategic planning

In addition, Blumenthal wants to do some long range planning. Often "Burroughs hadn't stopped to look ahead sufficiently to the future. . . Too often Burroughs was a technological leader and didn't take advantage of this capability and project forward three or four years to capitalize on it."

HOW DOES SDC FIT WITH BURROUGHS?

"Complementary," is how Burroughs officials describe the strengths of Systems Development Corp. SDC's primary areas:

- The systems division focuses on work for the federal government; Burroughs and SDC have often bid joint procurements. In the future this area is expected to expand outside of the government.
- The services group has a range of expertise in such areas as turnkey; facilities management; installation services; conversion services; state medical claims packages.
- The product group has the Datavault, which is a records manager based on two Intel 8086s and a Control Data disk that accepts input from word processors.
- The R&D group focuses on security, distributed data bases, and human languages.

Areas of future Burroughs emphasis include:

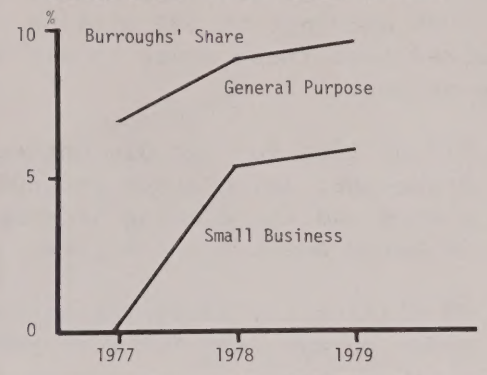
- Very small business systems and minis -- In the past, Burroughs had a strong position here and the company has the capability to do important and significant things, Blumenthal said. EDP/IR is betting we'll see a Burroughs supermini very shortly.
- Data communications (including terminals) -- announcements within the next several months.
- Proprietary semiconductor development.
- Office automation.
- Systems and software and medium and top of the line systems.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

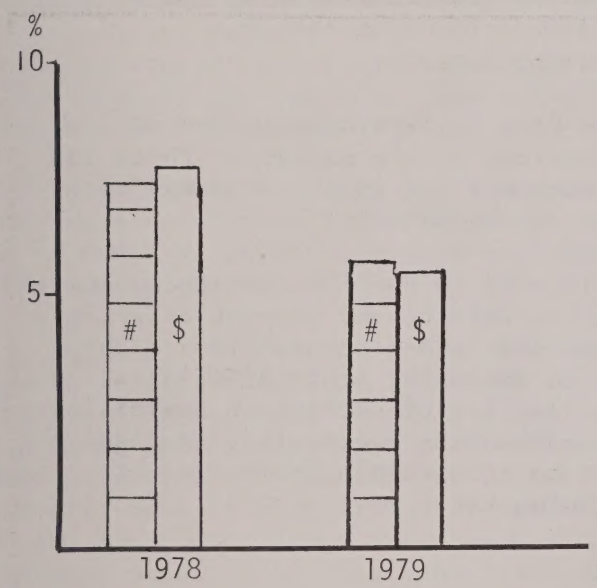
BURROUGHS' SHARES

While U.S. shipments of small business computers grew a healthy 38% between 1978 and 1979, Burroughs' share declined from 7.5% to 5.8%. The growth in the small business sector sometimes came at the expense of the smaller general purpose CPU categories. However, Burroughs fared better on its share of installed base figures worldwide.

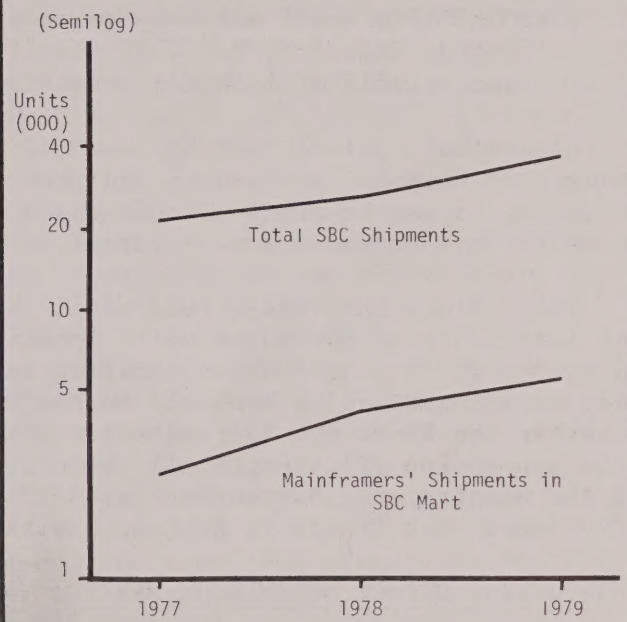
BURROUGHS' SHARE OF WORLDWIDE INSTALLED BASES



BURROUGHS' SHARE U.S. SHIPMENTS SMALL BUSINESS COMPUTERS

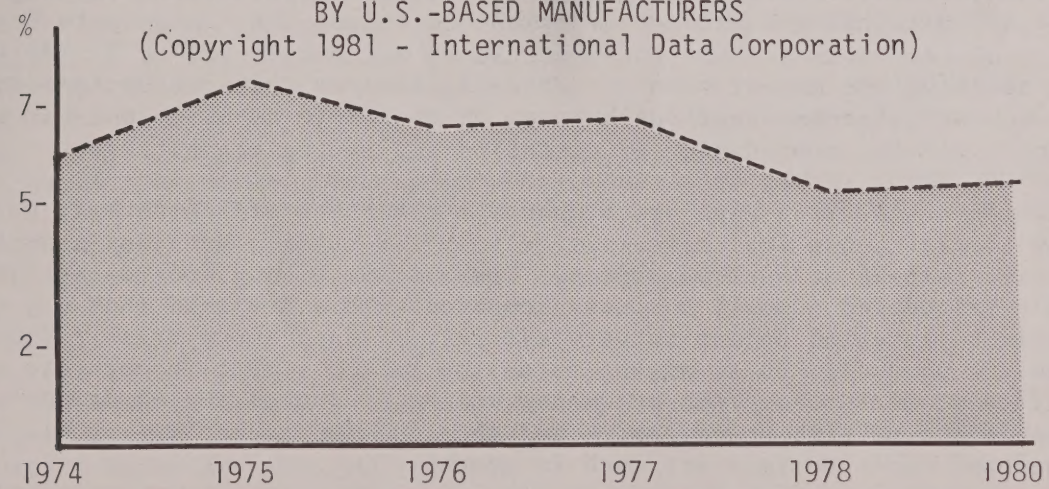


U.S. SHIPMENTS OF SMALL BUSINESS COMPUTERS 1977-1979



BURROUGHS' SHARE OF DOLLAR VALUE WORLDWIDE GENERAL-PURPOSE SHIPMENTS BY U.S.-BASED MANUFACTURERS

(Copyright 1981 - International Data Corporation)



Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

New broom sweeps clean

Some of the steps taken showed up in a $125 million writeoff, which reduced 1980 earnings to $82 million from $306 million last year. Blumenthal emphasized that these moves should result in a positive future impact. Among the moves were:

- $27 million for the discontinuation of the Burroughs Scientific Processor, calculators and adding machines, consolidation of some plants and the closing of some small subsidiary marketing efforts in Latin America and Africa.

- $8 million for early retirement program for certain employees in order to make way for some younger blood.

- $70 million additional reserves for accounts receivable and inventories.

- $20 million -- $5 million for adoption in 1980 of Financial Accounting Standards Board Statement 43 covering compensated absences, $15 million for assorted adjustments.

Blumenthal couldn't say how much of the drop in earnings was due to changes in shipment procedures and preoccupations by the marketing force in adjusting to new internal methods and how much was due to the economy, although he did say orders were softer in the second half.

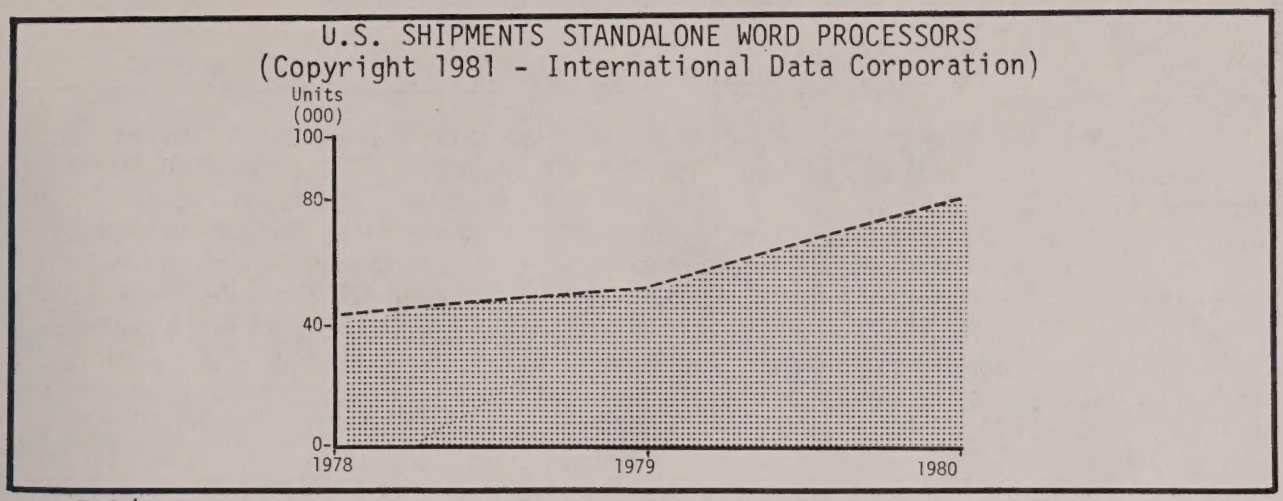
Thus, Blumenthal has served notice he intends to continue the technological leadership of Burroughs while boosting its service and support offerings. In addition, it should be interesting to see what other acquisitions occur, and, more importantly, how well Burroughs can implement their offerings. Remember the black eye Burroughs has after its lack of success in converting into a position of strength all the office automation pieces that it acquired. Of the mainframers, Burroughs was the first to have such a broad line of offerings. But it hasn't kept pace with the market.

SONY ENTERS OFFICE AUTOMATION MARKET

From the folks who brought us the belly telly, we now have: the Typecorder; a standalone word processing system; high resolution screen; small plain paper printer; 3.5 in. disk and a clear statement of intent that Sony wants to have one third of its business from the nonconsumer segment by 1985. In addition, Sony is courting the market with a roster of features that are designed to be handy, such as telecommunications between the portable terminal and the standalone unit, and the combination of dictation and typing capabilities.

Sony isn't the first Japanese company to enter the office market, nor probably the last, but its products seem to offer a more ingenious assortment of features, albeit at healthy prices. Toshiba has a Wang look-alike, while Panasonic introduced a small business computer with a keyboard that may take a long while to catch on unless in very specialized data entry areas. The Japanese are as qualified as anyone to devise products that incorporate several different features of the automated office -- one thinks of Japanese fax when one thinks of high speed fax -- and their copier technology is widely acclaimed and their designs are much in demand.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**



EDP/IR suspects that Sony's product offerings are only the first step -- and that Sony will be in the information processing part of the marketplace soon. For openers, it is marketing its new 3.5 in. rigid disk , which packs 437K per side, to original equipment manufacturers. The tracking density is 135 track/in. compared with 48 track/in. on conventional 5.25 in. floppies. The disk itself really isn't a floppy, but Sony is calling it that because no other name is appropriate. The drive itself is small --4"x5.1"x2" -- befitting its Sony origins.

In addition, the full page screen on the Series 35 standalone word processor has a resolution of 980 by 1,020 pixels, with a character matrix of 20 by 35 -- compared with the Wang 5 by 7 matrix -- so graphics seem to be a natural offering in the future.

The tiny, $1,400 Typecorder has modest editing capability -- 80 characters can be inserted per line -- and it can scroll back through the text, which is displayed on a single line. The device's guts are an RCA 1802 microprocessor and 2K of RAM; storage is Sony's microcassette. The unit is silent and can be used as either a typewriter or dictation unit and can be plugged into an acoustic coupler that transmits at 300 bit/sec transmission unit to a printer or the Sony 35. To see what one has written, the Sony $800 silent printer operates at 15 char./sec, uses plain paper and burns characters off a plastic ribbon. Both units fit into a brief case for the well equipped executive.

For extensive revisions, there's the Series 35, which accepts the microcassette and contains two microfloppy drives. The basic price with a single line display is $9,000 with daisy wheel printer and two drives. A unit with the screen costs $13,395. It is designed by a Vydec alum. EDP/IR would guess that the stand alone unit will soon be accompanied by cluster systems.

And, as if that weren't enough gadgetry, Sony also offers a $600 mechanical device that fits over a Selectric keyboard and drives it off the microcassette at about 13 char./sec, similar in principle to a player piano. For those wanting a daisy wheel, Sony offers the NEC unit.

Remember, Sony has a lot going for it -- an extensive dealer network in the U.S., a product nearly guaranteed to be an item some execs want for status symbols, and a hefty amount of backing from a corporation that has about $3 billion in assets and in 1979 ranked ahead of Fujitsu and IBM France among the 500 largest industrials outside the U.S.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

• ANTITRUST SETTLEMENTS IN VOGUE -- Looks like Justice and AT&T are at work hammering out a settlement and IBM bit the bullet and settled with Greyhound Computer Corp. in what was one of the oldest extant antitrust suits against the computer giant. Justice and AT&T convinced Judge Harold Greene of their serious intent to settle just two days after they opened the case per his orders. They reconvene Feb. 2. A settlement agreement under discussion reportedly includes provisions that AT&T divest some parts of Western Electric Co., at least one operating company and create a separate subsidiary for long distance products. In return, Justice might let AT&T enter the data processing arena, a forbidden fruit since the Consent Decree in 1956 but a move proposed under the second Computer Inquiry finding.

And on the eve of going to court a mere eight plus years after the original case was presented, IBM settled with Greyhound for $17.7 million, apparently one of the largest IBM settlement fees known to the public. IBM indicated the amount was intended as partial payment of legal fees. There's some speculation Greyhound's fees were less than that, however. This particular suit cannot be brought again as it was settled with prejudice. The original suit was dismissed by a judge in 1972 before IBM gave its defense and an appeals court in 1977 sent most of the case back for a jury trial. IBM probably decided it was cheaper to settle than to go through the trial and the inevitable appeals. IBM has a relatively good record with jury trials, although there are appeals pending from Memorex and Transamerica. Meantime, the grandad of all trials, Justice vs. IBM, lumbers on, with some wrap-up depositions etc. scheduled for this winter. The closing rounds are being fought largely on paper. There's talk about settlement attempts and Judge David Edelstein may have the dubious distinction of having presided over five plus years of trial only to find the decision wrested from his hands.

• MEGATEK RENIGS ON DATA GENERAL'S OFFER of acquisition after DG announced its first quarter operating earnings dipped from the year ago figures. Whether Megatek, a provider of graphics components and systems, changed its mind because of the dip in DG's stock price or got cold feet about DG or had a better offer isn't known.

• RANDOM HOUSE NAMED A DISTRIBUTOR of TRS-80 products for classroom use. In one of its cleverest marketing agreements, Radio Shack signed up the old-line classroom materials publisher and has plans for more. Random House is developing courseware.

• PRICE WATCH -- AGAIN. This time it's Control Data Corp. and Honeywell that have joined the ranks of those affected by inflation. CDC raises license fees 9.5% on all Cyber 700 Series network operating systems and other selected items as of Feb. 1. May 1 it will hike prices a similar percent for maintenance service and central enhancement. Leases of many Cyber 170s and other large systems will hike 7% effective March 1 and peripheral leases will rise between 7% and 12%. However, to ease the pain, add on memory for the 700 series will be reduced 30%. HIS hiked purchase prices and license fees 5% to 20% for most of its medium and large-scale computer products and services Jan. 26 for new business and April 1 on existing contracts, or according to terms. License fees for some software were raised up to 20%; rental/lease charges generally were 7% to 10% on DPS 8, Level 64, 66 and 68 and Datanet 8 gear.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

EDP industry report

• THE INTERNATIONAL DATA CORPORATION'S NEWSLETTER FOR EXECUTIVES CONCERNED WITH THE ELECTRONIC DATA PROCESSING INDUSTRY

"THE GRAY SHEET" JANUARY 16, 1981 • VOL.16,NO.17 P.J. McGOVERN,PUBLISHER

DECADE BEGINS WITH 'DEREGULATION' AS BYWORD; ON OTHER FRONTS, FOCUS SHIFTS TO SOFTWARE

During 1980, the stage was set for the battle of the decade between AT&T and IBM. The budding "deregulation" trend burst into bloom with the Federal Communications Commission's (FCC) Computer Inquiry II decision that gives AT&T the green light for "enhanced" or unregulated offerings as long as they are conducted by a separate entity.

A concommitant result of the decision allows services firms to provide enhanced services without slogging through the mire of paperwork imposed by regulatory status. Thus there should be much more action in the communications/service arena for both observers and participants.

Software, which has progressed through the ages from an unpriced quantity to the primary revenue source for a host of companies, will continue its climb to preeminence and in 1981 should dominate as the most important aspect of the computer industry. Even now, software is becoming evident in different forms including programs and functions embedded in chips. Other trends EDP/IR sees:

- Move toward consumer-oriented marketplace affecting channels of distribution, services, desktops, information appliances, and more concerted thrusts into the home.
- The rate of technological change in the next four or five years will be unparalleled.
- Office automation growth as vendors search for direction; users want cost-effective, integrated, compatible systems.
- Increased emphasis on communications, both in local networks, within a metropolitan area, and intercity. Watch Ma Bell, Satellite Business Systems and Cable TV battle for the home.
- Startup firms have at last found the roads to financing. Investors consider the industry a darling (reminiscent of 1969).

EDP Industry Report is published in annual volumes of twenty-four issues each by International Data Corporation, Post Office Box 915, 214 Third Avenue, Waltham, MA 02254. Entire contents ©1981 by International Data Corporation. **Director,** James Peacock; **Editor,** Molly Upton; **Census Editors,** Paul Arabasz, Lloyd Cohen; **Contributing Editors,** John Gantz, Jack Hart, David Moschella, David Terrie, Nancy Scull; **Circulation Manager,** Mary M. Trayte. Patrick J. McGovern, Chairman, International Data Group. John P. Breyer, President, International Data Corporation. Editorial ideas and information are researched and formulated by the editorial staff. Information and opinions in each issue are based on the best information available, but their accuracy and completeness cannot be guaranteed. **Subscriptions:** One year, $245, three years, $590. Single copies priced as indicated on inside pages. Prices for multiple copies on request. Reproduction without written permission is completely forbidden. Telex 92-3401; Telephone 617/890-3700.

SIGNS OF MORE TO COME

Among the events that presage trends, EDP/IR suggests these as examples of the '80s kickoff.

- Awareness of the potential of Japanese vendors in the U.S. heightened when: Fujitsu formed a joint venture with TRW that initially will handle point of sale systems but which might be an excellent vehicle for a beachhead in the 370-range of systems; Amdahl fumbled twice in attempted mergers with Memorex and then Storage Technology Corp. (There's widespread suspicion that Fujitsu's presence as an Amdahl shareholder, if not demands, nixed the deals.); Sony announced it intends to span the range of office automation products, commencing with a tiny terminal and a word processing system; NEC is pushing its repriced Astra small business system and garnering more daisy-wheel pacts as in Honeywell's office venture.

- Thought: the Japanese are really going to make hay in the desktop arena. The Hanover Fair was populated with Japanese-made systems, possibly prepping in Europe before making the big plunge in the U.S. Rumors abound of a NEC desktop priced around $800. In desktops, the patterns of distribution and support and rules of the game lend themselves more to the import of Japanese-made systems than do the mini or mainframe arenas. How about a desktop that can be compatible both with Apple and TRS-80?

- Pricing increases were frequent last year -- some companies such as DEC and IBM played the tune twice. Hikes in leasing rates and maintenance were most frequent, reflecting the cost of money and general inflation.

- Services continued to be the bazaar at Mecca attracting acquisition activity, both from within and without the fold. The trend for outsiders to get into the action continued. For example: Schlumberger agreed to acquire Manufacturing Data Systems Inc.; Hyatt Corp. eyed Trans Union Corp.; Readers Digest bought The Source. Those already in the fray include McGraw Hill (DRI); Dun & Bradstreet (NCSS, Donnelly); H&R Block (Compuserve); American Express (Warner-Amex joint venture and First Data Resources).

- Office Automation (OA) superceded Distributed Data Processing (DDP) as the buzzword. But ultimately OA will wind up being part and parcel of the DDP concept. From the top-down approach, integrating DP and other functions: Prime Computer got there first this year with its management and administrative terminals hooked to a Prime 50 Series mini -- with such goodies as tickler files, electronic mail, and appointment scheduling. Honeywell ended the year by announcing its product based on the Level 6. IBM during midyear announced that it eventually will have assorted software products to glue most of its pieces together. Datapoint put its data base retrieval software onto its Arc-based system.

- At the low end, there were a plethora of announcements, but EDP/IR thinks IBM's Displaywriter could be the hottest product by the time IBM and various systems houses fully utilize its 8086 innards.

Reproduction forbidden. Additional copies airmailed same day, $20 each; single copies to non-subsribers, $40. Call 617/890-3700.

SIGNS OF MORE TO COME

Among the events that presage trends, EDP IR suggests these as examples of the '80s kickoff.

- Awareness of the potential of Japanese vendors in the U.S. market-- some when: Fujitsu formed a joint venture with TRW that initially will handle point of sale systems but which might be an excellent vehicle for a beachhead in the 370-range of systems; Amdahl fumbled twice in attempted mergers with Memorex and then Storage Technology Corp. (there's widespread suspicion that Fujitsu's presence as an Amdahl shareholder, if not demands, mixed the deals.); Sony announced it intends to span the range of office automation products, commencing with a smart terminal and a word processing system; NEC is pushing its rebadged Astra small business system and garnering more daisy-wheel parts as in Honeywell's office venture.

- Thought: the Japanese are really going to make hay in the desktop arena. The Hanover Fair was populated with Japanese-made systems, possibly prepping in Europe before making the big plunge in the U.S. Rumors abound of a NEC desktop priced around $900. In desktops, the patterns of distribution and support and rules of the game lend themselves more to the import of Japanese-made systems than do the mini or mainframe arenas. How about a desktop that can be compatible both with Apple and TRS-80?

- Pricing increases were frequent last year -- some companies such as DEC and IBM played the tune twice. Hikes in leasing rates and maintenance were most frequent, reflecting the cost of money and general inflation.

- Services continued to be the hotbed of (and attracting acquisition activity, both from within and without the field. The trend for outsiders to get into the action continues. For example: Schlumberger agreed to acquire Manufacturing Data Systems Inc.; Syntex Corp. owns Tymes Union Corp.; Readers Digest bought The Source. Those already in the fray include McGraw Hill (DRI); Dun & Bradstreet (NCSS, Donnelly); H&R Block (CompuServe); American Express (Warner-Amex joint venture and First Data Resources).

- Office Automation (OA) superseded Distributed Data Processing (DDP) as the buzzword. But ultimately OA will wind up being part and parcel of the DDP concept. From the top-down approach, integrating DP and other functions: Prime Computer got there first this year with its management and administrative terminals hooked to a Prime 50 Series mini -- with such goodies as tickler files, electronic mail, and appointment scheduling. Honeywell ended the year by announcing its product based on the Level 6. IBM during midyear announced that it eventually will have essential software products to glue most of its pieces together. Datapoint put its data base retrieval software onto its Arc-based system.

- At the low end, there were a plethora of announcements, but EDP/IR thinks IBM's Displaywriter could be the hottest product by the time IBM and various systems houses fully utilize its 8086 engine.

NO RERUNS, PLEASE

Glancing over the potpourri of events that symbolized 1980, EDP/IR herewith presents a brief list of items hopefully of the past:

- Prime rate hit 20% twice during the year, causing close scrutiny of inventory by everyone and special consternation to systems houses.
- Embargo of DP products to the Soviet Union; awareness of the importance of software and embargo of same as well. (ADR's advertisement regarding the arrest of someone attempting to lift its program tapes for delivery in the USSR was an all-time great.)
- Mainframe makers tripped on the path to use of increased density LSI components in a production mode -- Burroughs delayed some shipments and cancelled its big processor; Honeywell abandoned its big CPU with current mode logic (CML) and the industry widely suspected IBM of delaying product introductions because of component fabrication techniques.
- IBM went to the chip market for 16K RAMs and thus helped induce shortages that some others, such as Data General, said created adverse business conditions for them.
- Widely held opinion became documented fact -- Hewlett-Packard testified before a government subcommittee that inspection of incoming Japanese components showed far better quality control than those from U.S. makers. (Quality plus availability helped boost Japanese market share during the year.) Silicon Valley is redoubling its efforts to establish a reputation for quality.

IBM's 3081 "H" introduction probably set the philosophical stage for large mainframes in the near future -- evolution rather than drastic innovation. But there's still a lot of potential untapped power, Big Blue admitted. The world also expects to see some sort of native mode for the 3081.

The rate of technological change in the next four or five years will dwarf that of the past, IDC expects. IBM's thermal conduction modules (TCMs) and their innovations in packaging are significant. Packaging is emerging as the next area of challenge for IC designers.

Taking a global look, Europe appears to be softening, which represents a caution signal to those companies with lots of business there. Japan Inc. seems to be still in the phase of positioning itself for the U.S. market, and is totally committed to IBM compatibility in mainframes, not a bad idea for the remnants of the seven dwarfs to contemplate if they plan to snap much business from IBM.

During 1980, we saw several hardware vendors reprice software; the most notable aspect was IBM's step-by-step removal from the public domain of more of its operating systems. The net result, both for Big Blue and others, is revenue from particular aspects of the operating system. Amdahl already is marketing elements that it claims enhance the performance of IBM systems, and

Reproduction forbidden. Additional copies airmailed same day, $20 each; single copies to non-subsribers, $40. Call **617/890-3700.**

other plug compatible vendors, if they want to survive in a world other than 370-compatibility, will have to supply their own operating software elements.

As the focus shifts to a consumer-oriented marketplace, services have a chance to live up to their name and capitalize on providing what the user wants in an easy-to-retrieve form. Outside companies will continue to view the services arena as a vehicle for entry into the information industry.

The rules of the game are changing: customers demand better service, easier to use systems, and increased reliability; at the same time, it's getting more difficult to maintain profit margins with the old ways of distribution and the new layer of support demanded by customers. Witness the burp incurred in the earnings rise of a couple of minicomputer companies during some 1980 periods.

Among the steps vendors are taking to face the issue of how to make a profit with products sporting smaller tickets:

- Support
  + Remote diagnostics
  + Systems engineering by telephone

- Distribution
  + Retail stores -- either exclusive to a company -- DEC, IBM -- or department store approach -- Xerox.
  + Phone orders -- IBM's 3101 terminal
  + Trial period -- IBM's 3101 and color graphics terminal
  + Deciding whether to use distributors or to sell directly to retailers -- Apple and Commodore have both changed their plans during the year; a messy procedure at best.

Communications in picosecond

- Courtroom activity: MCI won an antitrust trial vs. Ma Bell claiming deprivation of access to local loops. An appeal is underway. Ma Bell and the U.S. Justice department were scheduled to go head-to-head in court starting Jan. 15. Any bets the trial will be short-lived?

- Bell is thinking up some pretty fancy phone offerings, along the lines of call-forwarding only more complex. And it is determined to give Cable TV a run for its money in additional home services such as security monitoring, fire alarms and energy conservation. Although many have forgotten about the panacea called Advanced Communications Service (ACS), that too may eventually emerge.

- The term local network is a hot button. Fiber optics shares the glamor with such mundane items as coaxial cable. However, there is coax and coax . . . and broadband coax functions as a captive broadcast spectrum, allowing simultaneous multiple uses. For local nets, there are two schemes awaiting approval from the IEEE -- token passing and the Ethernet-type of collision-avoidance. Given the industry's past successes at initiating standards in advance, probably both techniques will evolve. One IDCer sorts out the various communications types by geographical proximity: building or campus, wherein one doesn't have to link to a carrier; metropolitan area; and intercity.

Reproduction forbidden. Additional copies airmailed same day, $20 each; single copies to non-subsribers, $40. Call **617/890-3700.**

HP, HONEYWELL LET LOOSE SUPERMINI BARRAGE

Hewlett-Packard and Honeywell let fly with improved price-performance superminis oriented to DDP and their opening salvos at the office automation market. Honeywell featured a 32-bit machine, while HP stuck to its traditional 16-bit architecture.

HP gets the prize for changing the price-performance ratios -- the 3000 Series 44 offers up to 100% more throughput capability than the previous top of the line, the 3000 Series III, at a mere 5% increase in price. Thus the 44 is HP's strongest weapon in its arsenal for the distributed data processing market. The 44's base price is $109,445 for 1 Mbyte, four terminal ports, console, 50 Mbyte disk and 1,600 bit/in tape drive. Maximum memory is 4 Mbytes and disk storage 1.9 Gbytes, double the limits on the III. The processor speed was increased and the multi-programming executive was improved, HP said, and will ultimately be available on older processors.

The system is software-compatible with the rest of the 3000s. Older 3000s may be upgraded by swapping CPUs. The new 44 does not use the silicon on sapphire chip fabrication technology of the other CPUs; HP indicated the SOS will be used where low power consumption is a priority. Upgrades for the Series 44 start at less than $45K after a credit for the return of a maximum memory Series 33 processor. HP estimates deliveries at 16 weeks, with upgrade deliveries somewhat longer.

Illustrative of the confidence HP has in the CPU is its offer of 99% hardware uptime moneyback maintenance agreement. The Guaranteed Uptime Service, based on 24 hour/day, 7 day/week coverage, applies to the main processor and memory and up to two disks installed within 100 miles of an HP Primary-Service-Responsible Office. The 44 includes a separate maintenance processor and offers remote diagnostics. There's an additional fee for the money-back uptime agreement; 8.4% of list price vs 7.1% without guaranteed uptime. Normal 13/hour day, five day/week coverage costs 5.1% of total list price.

HP also is carrying a Diablo-made daisy-wheel printer to supplement its Text and Document Processing software for its 3000s.

Although aimed now at the DP arena, HP's laser-based printing system, the HP 2680, conceivably could find its way into an office environment. Marketed as a printer for DDP systems, the device uses z-fold paper and requires linkage with a 3000, but does not now accept the Series III because it doesn't use the HPIB interface. HP says the 2680 takes little CPU overhead and estimates the smallest 3000 could handle a printer with 20% or less of its resources. Printing speed is 45 page/min.

Although relatively slow and expensive, true to HP's talents the device has more graphics input capability than others on the market, such as Xerox's 9700 and IBM's 6670. The device features 32 character sets and electronic forms; fonts can be 22 char/in. or large and bold. Included in the $121,000 price tag are the Interactive Design System software and the Interactive Formatting System software, but the associated graphics terminal is not. The IDS defines and modifies character sets, logos and special symbols and creates forms. An HP 9874A digitizer can be used. The IFS can merge multiple parts of an electronic form, thus replacing expensive multi-part forms, HP said. Expect HP to use its graphics talents in other office automation areas too.

Reproduction forbidden. Additional copies airmailed same day, $20 each; single copies to non-subsribers, $40. Call **617/890-3700.**

HIS -- Level 6

HIS introduced a line of 10 CPUs, including two 32-bit models, as packaged small systems rather than minis. The line offers 100% more power than the Level 6s at 20% more cost. Basically HIS will continue to offer the Level 6 mini for the OEM and is packaging the revamped CPU alias DPS into small systems; all but the 6/3X are upgradable to 32-bit systems. The DPS 6 line runs from $30K to over $500K.

The systems run under Gcos 6 so are software compatible with the Level 6. Gcos 6 Mod 400 has a new release 2.1 that includes checkpoint restart, a multi key index facility, record locking and buffer pooling. License costs $4,500 with annual support of $2,500. The instruction sets for the Level 6 47 and 57 are the same as those used on the DPS 6/30 through DPS 6/76.

A noteworthy feature: Cobol is immediately available on the 32-bit CPUs, unlike DEC and DG, where the business user was served after the scientific community. For the 32-bit systems, HIS claims the highest Cobol throughput of any system in their price ranges.

The DPS 6/92 competes with the Vax 11/780, HIS indicated. Throughput on the bus was expanded from 6.5 Mbyte/sec to 13 Mbyte/sec. The 16-bit bus was extended to 32 bit and another 16-bit register was added. There are two slave processors to execute commercial and scientific instructions; the main CPU fetches the next instruction. The CPU is bit slice with other micros scattered throughout. The 32-bit CPUs have 64K RAM with cycling to control alpha particle contamination. There's single bit error correction and double bit detection. Although the boards can accept either 64K or 16K, the system's memory must be homogenous. HIS anticipates putting 64K in the smaller machines later.

DPS 6
(Copyright 1981 - International Data Corporation)

DPS	Typical Systems Price	Power x	Level 6	Max. Mem.	32-bit Upgradable	Additional Features
6/96	$461,800	200% Cobol, Fortran	6/57	16 M		slaves, FP, cache
6/94		"	"	6 M (a machine to upgrade to)		"
6/92	$223,400	"	"	4 M		cache, slaves, FP
6/76	$174,300	30%-100%	6/47	2 M	yes	cache, slaves, FP
6/74	$134,300	"	6/43	1 M	yes	cache, slaves, FP
6/54	$72,700	30% - 50% 20% - 100% Cobol	6/43	1 M	yes	slaves, FP
6/48	$72,200	30% - 100%	6/33	1 M	yes	FP
6/38	$44,500	100%	6/23	768K	no	
6/30-34	$28,800-$32,800	100%	6/23	256K	no	

Reproduction forbidden. Additional copies airmailed same day, $20 each; single copies to non-subsribers, $40. Call 617/890-3700.

All but the low end 6/30, 32, 34 and 38 are field upgradeable to 32-bit systems, HIS said. And the Level 6 devices can obtain the function level of the high-end 32 bit systems, HIS indicated.

In terms of power, the DPS 6 line overlaps the 62 and 64 lines, but HIS sees them sold for different applications. Some examples of configurations and prices: a 6/30 with 128K, 10 Mbyte disk, 160 char./sec printer, two CRTs, $28,800. A DPS 6/92 with cache, scientific and commercial processors, 1 Mbyte, 64 communications lines, two disks, console, 600 line/min printer, $223,400.

HIS Plans

HIS indicated it plans to market the DPS 6 aggressively and more selectively in order to improve its product margins to that of the rest of the industry. James Pompa, vice-president and general manager of Honeywell's Small Systems and Terminals Division, indicates he hopes to get R&D expenses down to under 10% of revenues. (The reason HIS' figure is high relative to the rest of the industry is its late "reentry" into the mini business.)

HIS plans to satisfy large and medium size customers with leading edge needs. There will be more of a focus on specific industries worldwide, such as manufacturing and airlines, and others such as finance, health, distribution, and government, in specific countries.

Why the package? EDP/IR got the feeling HIS views systems packaging as perhaps a more economical route rather than carrying a zillion parts as required for the mini (OEM) business. However, HIS stressed it will continue to provide Level 6.

The Level 6 has been a real boon to HIS, emphasizing its thrust in DDP. HIS President Steve Jerritts indicated that in some cases installations of Level 6s helped sell larger systems. Primarily, however, it's the availability of Level 6 as part of a DDP system that helps sway users who want to put new applications up on medium or large size DPS hosts with distributed minis.

HIS indicated it has shipped 10,000 Level 6s with the average system value about $80K. The value of OEM shipments is around 15% and should increase in the next few years; an additional 8% to 10% is used internally. To facilitate component sales, HIS is starting Wats line sales of memory boards and other parts in addition to providing stock in a computer store.

Office Systems

HIS is attempting to take the top-down approach to office automation, with the emphasis on compatible file structure among word processing and DP software. There are two offerings, based on the Level 6/DPS 6 hardware. The WP 6 software, $5,000 with annual support charge of $1,350, integrates WP and DP and provides communications. It runs under GCOS 6 Mod 200 and 400 and goes on DPS 6 or on Level 6/43 and above.

The Administrative System runs only on DPS systems and is a communicating shared resource system with WP and document distribution capability. Administrative System 4 on the 6/30 and 32 with up to four workstations costs $3,000; the 16 runs on the 6/38 and 48 and handles 16 workstations for $5,500. Annual support charges are $810 and $1,485, respectively.

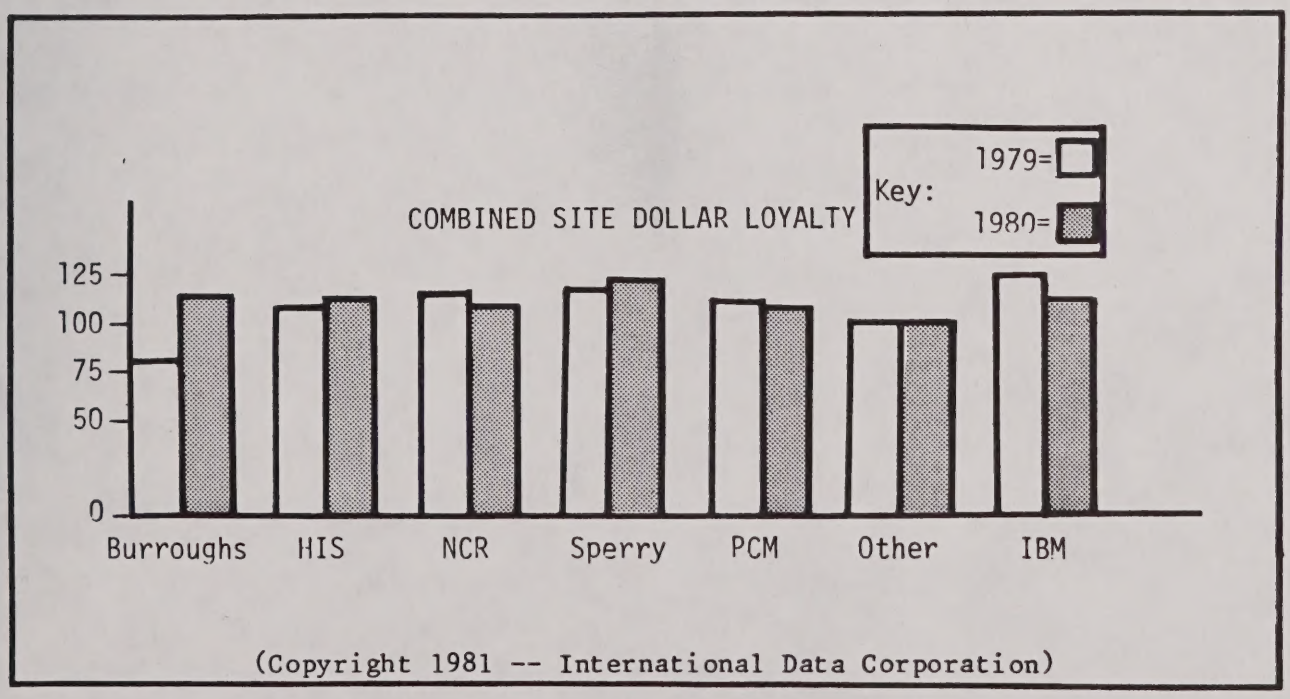
Reproduction forbidden. Additional copies airmailed same day, $20 each; single copies to non-subsribers, $40. Call **617/890-3700.**

• IBM ENDS YEAR WITH PRICE HIKE -- just as it did in 1979. Looks like the hikes will come every six months like clockwork -- December 29 in both 1979 and 1980 and June 27 in 1980. GSD and DPD generally levied hikes of 8% on lease and rental effective April 1 and up to 5% on purchase effective immediately. The result is encouragement of purchase. Maintenance charges are going up 15% and field engineering rates about 10%. Software and education products are raised as much as 15%. Various new products exempted from purchase and lease hikes include the 3033S and 3081 and other assorted items such as the 3420 drive and some printers. And the 4300s and 8100s as well as GSD products such as the S/34, S/38, displays and the 5520 administrative system were spared purchase hikes this time around. Through some tweaking, IBM indicated it would like to have its 3350s on lease converted to purchase. The 3350 rental and lease went up 9.4% but purchase and maintenance remained the same. However, the 3420 drive, exempted from purchase and lease hikes, incurred an 8.7% rise on maintenance, which is applied only to purchased units.

Interestingly, in mid December IBM lowered the price of its top of the line S/1, the 4955E, by 24% to clear the decks for a new model, presumably.

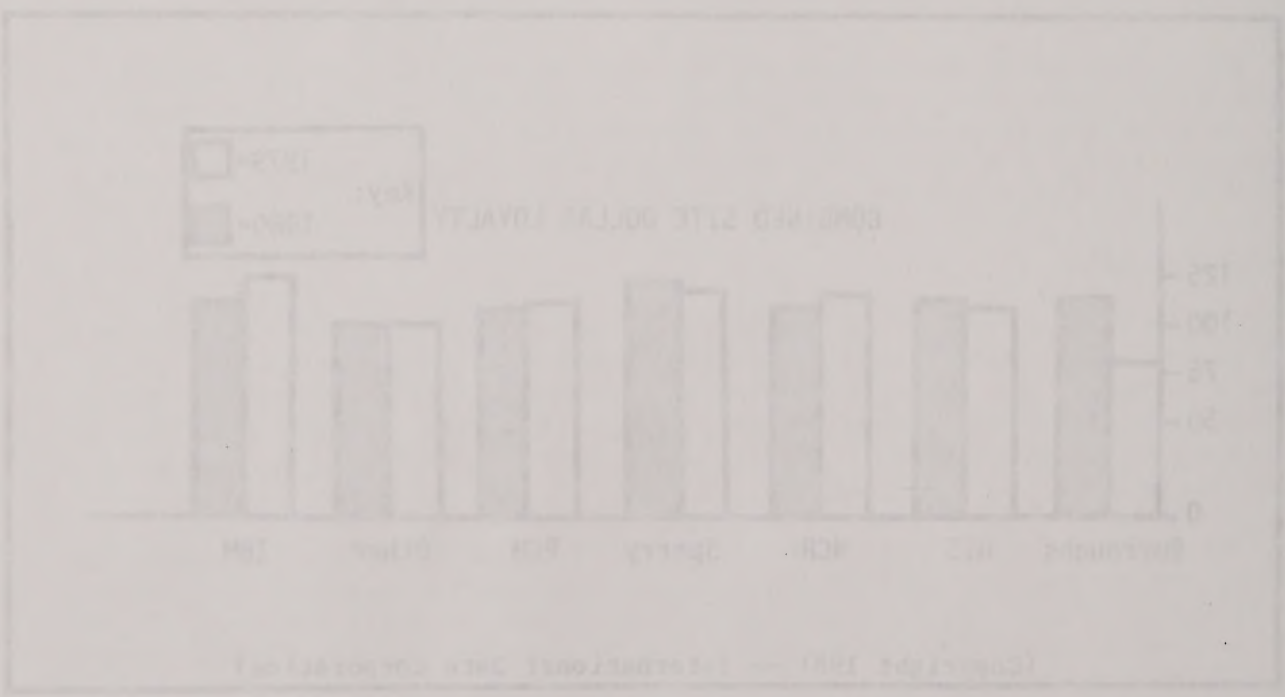
• DEC DID TOO . . . accompanied by Memorex. With the exception of the VAX 11/780 and newer 750 and the Decsystem 2020, DEC raised prices on most packaged systems, peripherals, software and services by 4% to 6%, with the older products garnering even higher increases. DEC's raise was also its second during 1980. Memorex upped lease and rental prices on its disk systems by 7% effective immediately and raised maintenance prices as of April 1 on tape systems 10%, following IBM's lead.

• BURROUGHS IMPROVED DOLLAR LOYALTY ranking in 1980, according to a preliminary cut of IDC data. As the graph below shows, Burroughs turned its combined site dollar loyalty figure from its all-time recent low in 1979 of .79 to a most respectable 1.10 during 1980; see EDP/IR Dec. 29, 1980.



(Copyright 1981 -- International Data Corporation)

Reproduction forbidden. Additional copies airmailed same day, $20 each; single copies to non-subsribers, $40. Call **617/890-3700.**



EDP industry report

• THE INTERNATIONAL DATA CORPORATION'S NEWSLETTER FOR EXECUTIVES CONCERNED WITH THE ELECTRONIC DATA PROCESSING INDUSTRY

"THE GRAY SHEET" DECEMBER 29, 1980 • VOL.16,NO.15&16 P.J.McGOVERN,PUBLISHER

Special loyalty edition

IBM MAINTAINS LEAD IN USER "LOYALTY" RATINGS; PCMS FORGE AHEAD IN MAINFRAME COMPETITION

Since EDP/IR last looked at the vendor "loyalty" scene, most mainframers have uncorked their latest families of products, making the loyalty study even more interesting as users deal with the dilemmas of alternatives, both from their vendor and others, that feature improved price/performance.

As might be expected with all the new models available, the Gray Sheet's twelfth study shows the 1979 dollar base churned more than in 1977 -- 35% vs 20% on a dollar basis -- as users opted to upgrade to equipment that offered them better performance and hopefully more functionality.

True to past form, users are no more ready to go through the hassles of conversion from one vendor to another than previously. Now, however, with PCMs, IBM users have another choice and there were signs of substantial action in the IBM base. While technically it might not be erosion, a PCM installed represents lost opportunity to Big Blue. And there's quite a bit of action not reflected here among users procuring their first mainframes.

Overall, with the exception of PCM incursion into the IBM base, and some slippage from Burroughs at multiple-vendor sites, users' loyalty to specific vendors continues to be significant. A couple more trends appear:

- IBM is still very aggressive, although its difference in ratings compared with the rest of the troops has been somewhat diminished by the PCMs. Big Blue maintains its "user loyalty" crown. Should be interesting when we can see the full impact of the 4300s

- A change in CPU vendors as a measurement of loyalty continues to diminish as a benchmark of overall loyalty . . . as the CPU diminishes in importance.

EDP/IR reiterates its warning: Brand loyalty is not the whole story. But the loyalty study is one of the oldest, continuous trackings of the industry and therefor offers a unique historical perspective for examining trends.

EDP Industry Report is published in annual volumes of twenty-four issues each by International Data Corporation, Post Office Box 915, 214 Third Avenue, Waltham, MA 02254. Entire contents ©1980 by International Data Corporation. **Director,** James Peacock; **Editor,** Molly Upton; **Census Editors,** Paul Arabasz, Lloyd Cohen; **Contributing Editors,** Dave Dillman, John Gantz, David Moschella, David Terrie, Nancy Scull; **Circulation Manager,** Mary M. Trayte. Patrick J. McGovern, Chairman, International Data Group. John P. Breyer, President, International Data Corporation. Editorial ideas and information are researched and formulated by the editorial staff. Information and opinions in each issue are based on the best information available, but their accuracy and completeness cannot be guaranteed. **Subscriptions:** One year, $245; three years, $590. Single copies priced as indicated on inside pages. Prices for multiple copies on request. Reproduction without written permission is completely forbidden. Telex 92-3401; Telephone **617/890-3700.**

HOW GOOD IS THE LOYALTY STUDY AS A MEASURE?

For years the Gray Sheet's "Loyalty Study" has been pored over by the mainframers when it's released . . . and over the years their feedback has prompted changes to the study.

For instance, in 1974 the EDP/IR began tracking loyalty on the basis of the dollar value (if sold) of the equipment at the sites -- criticisms in the past noted that site counts didn't tell the whole story, since swapping out a 360/65 could be a lot more "painful" a defection than swapping out a System/3.

In addition, because of the inexactitude of site-count measures for determining true loyalty or competitiveness at mixed vendor sites, a way was designed to lump single and mixed vendor sites together and deal only with the dollars represented by the equipment involved.

This year, in response to another criticism -- that loyalty and competitiveness mean a lot more if equipment is on rent or lease from the manufacturer -- EDP/IR offers a separate loyalty study for such rented or leased equipment. (Thus the buying and selling of used equipment drops out.)

Now, having done that, EDP/IR steps back and asks . . . does it really make a difference?

You be the judge. Looking at all the studies -- single site, dollar loyalty, rent or lease from mfg only -- the rankings look like this (not counting PCM or other):

LOYALTY				COMPETITIVENESS			
By Site		By Dollar		By Site		By Dollar	
All	R/L Mfg	All	R/L Mfg	All	R/L Mfg	All	R/L Mfg
IBM	IBM	IBM	SPY	BUR	BUR	SPY	SPY
BUR	BUR	SPY	IBM	IBM	IBM	IBM	IBM
NCR	NCR	NCR	NCR	SPY	SPY	NCR	NCR
SPY	SPY	BUR	HIS	NCR	HIS	HIS	HIS
HIS	HIS	HIS	BUR	HIS	NCR	BUR	BUR

In other words, there's a little in there for everybody. The PCMs, by the way, rank number one in all "competitiveness" category -- since after all, "cracking" IBM sites is what they're all about. They don't score quite as high in all loyalty categories, but then again the sample is small.

So, how good a measure? The main sample is big (6000+), the sample for equipment on rent or lease from the manufacturer much smaller (1500+). That's still a bigger cut than the first loyalty studies done in the 1960s.

Unfortunately, the size of our sample for 1980 was too small for significant findings -- which means we'll be updating loyalty within 1981. Future Gray Sheets will also deal more with "crack sites," and also loyalty for Western Europe.

But then, it's all in how much you value the CPU.

Reproduction forbidden. Additional copies airmailed same day, $20 each; single copies to non-subsribers, $40. Call **617/890-3700.**

The vendor scorecard

Here's a wrapup of how the individual vendors fared. Granted, their fates rise and fall according to their product lines, customer service, growth paths . . . and competitive alternatives. From the latest study:

- Times seem to be changing. IBM lost its dollar loyalty lead in 1978, but regained it in 1979, reflecting PCM incursions and possible system consolidations as 303Xs replaced multiple 370s. IBM continued only middling in dollar competitiveness, and was outdone by several, including PCMs.

- PCMs were the emerging star of this study, with probably the bulk of the credit going to Amdahl and Itel/NAS, with help also from CDC. Now the Magnusons and IPLs and Cambexes are coming onstream. EDP/IR has its eyes on the Fujitsu-TRW joint venture as a possible source of 4300-size CPUs. By the nature of the beast, PCMs are apt to be found in "crack" sites and thus high in "competitiveness."

- Burroughs has continued its slippage from its erstwhile position as "perennial challenger." and went from the attic to the cellar in the dollar competitive figures between 1977 and 1979. The Motown maker was also last in terms of dollar loyalty in 1979, so its base would appear less valuable than previously. However, the case may not be as dire as it appears, since EDP/IR suspects Burroughs has increased its base by grabbing quite a few new users with its low end B80 and B90, which would not show in the loyalty study. In addition, the single-site users, its traditional stronghold, still are fervently loyal. There were far more additions in the single site base than in multiple sites.

- Honeywell has corrected its 1978 dip in dollar loyalty; probably users were waiting for the new round of DPS systems. HIS maintained its dollar competitive stance at a respectable level. However, at mixed sites, its dollar value declined, indicating HIS was fair game for other alternatives. At single vendor sites HIS didn't fare too well -- but they account for only a third of the 1979 migration activity by dollar.

- NCR is still among the leaders in dollar loyalty -- and topped IBM in 1978. As expected, there was also much more activity in its single vendor sites than in mixed sites.

- Sperry Rand's Univac division dipped in 1978 but regained its place in dollar loyalty and competitiveness, and managed to turn around a negative situation within its mixed site base in 1978, when the dollar value installed actually decreased. Most of the movement in 1979 came in the mixed sites.

- The "other" category shows surprising strength, considering PCMs have been broken out into their own category. In addition to the sizeable DEC base, as well as CDC and Cray, EDP/IR suspects that large minis at central sites are creeping into the general purpose file here. As expected, since the breakout of PCMs the "other" category has dipped sharply in its competitive dollar stance.

Reproduction forbidden. Additional copies airmailed same day, $20 each; single copies to non-subsribers, $40. Call **617/890-3700.**

SINGLE-VENDOR SITE LOYALTY
(Copyright 1978 by IDC)

	(1)=1979 Sites Gained	(2)=1979 Sites Lost	(3)=1979 Sites Loyal	% Loyal * 76	77	78	79	% Competitive + 76	77	78	79
Burroughs	65	43	306	88	84	91	88	60	53	27	6
HIS	24	62	155	66	82	70	71	-9	-1	-11	-18
NCR	10	69	267	81	82	83	79	-10	-14	-14	-18
Sperry	35	47	113	76	85	78	71	15	20	14	-8
Other	127	29	226	77	85	89	89	SS	SS	46	38
PCM	29	0	5	In "Other"			100	In "Other"			580
Subtotal	290	250	1072	85	83	83	81	11	20	8	3
IBM	135	175	2726	91	91	92	94	-5	-6	-5	-1
TOTAL	425	425	3798	89	89	89	90	-	-	-	-

* % LOYAL = $\frac{(3)}{(2) + (3)}$

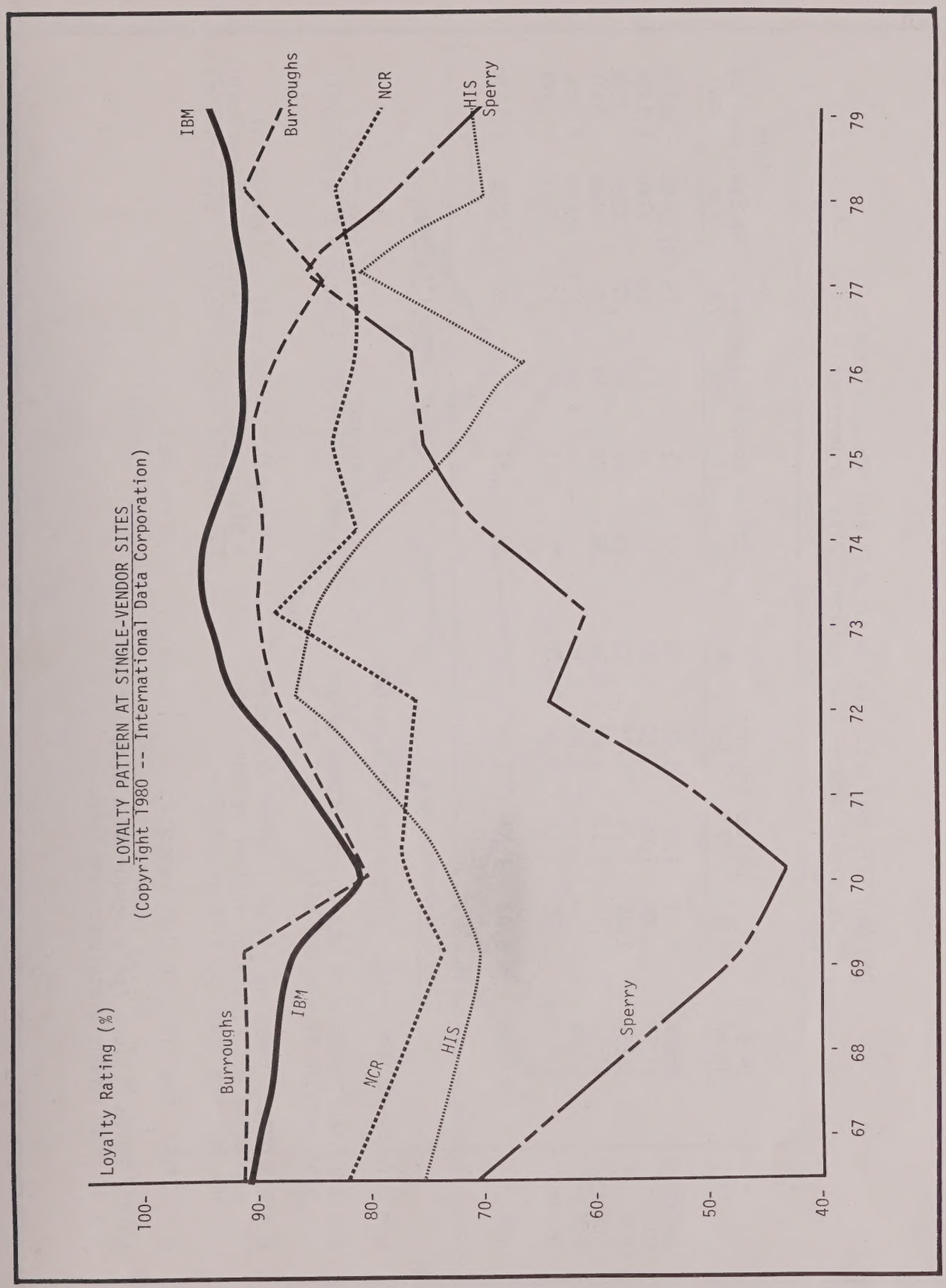
+ % COMPETITIVE = $\frac{(1) - (2)}{(2) + (3)}$

NOTE: 1979 figures reflect movement shown and are based on a sample of 4223 sites (vs. 2787 for 1976). The single site sample for 1980 was too small for a good 1980 estimate.

INSTALLED BASE OF SITES IN "LOYAL" SAMPLE (3) AT YE 1979

Burroughs	HIS	NCR	SPY	OTHERS	IBM	PCM
$357M	$254M	$132M	$337M	$139	$7,705M	$18M

Reproduction forbidden. Additional copies airmailed same day, $20 each; single copies to non-subscribers, $40. Call 617/890-3700.



Reproduction forbidden. Additional copies airmailed same day, $20 each; single copies to non-subsribers, $40. Call **617/890-3700.**

COMBINED SITE PROFILE: DOLLAR LOYALTY AND COMPETITIVENESS
(Copyright 1980 -- International Data Corporation)

	1979 D+L+N	Dollar Loyalty 76	77	78	79	Dollar Competitiveness 76	77	78	79	1979 Av Sys Rem	Value Add
Burroughs	$516M	1.21	1.21	1.05	.79	.51	.51	.14	-.15	$1,049K	$687K
HIS	$327M	1.06	1.06	.92	1.07	.17	.15	.13	.16	774K	1,153K
NCR	$126M	1.19	1.24	1.19	1.13	.26	.27	.22	.17	238K	308K
Sperry	$455M	1.10	1.13	1.02	1.16	.32	.20	.12	.27	966K	1,741K
PCM	$ 55M	-	-	1.55	1.10	-	-	6.30	.1.12	2509K	1,844K
Other	$381M	1.15	1.11	1.04	1.00	.36	.41	.09	.10	278K	194K
IBM	$8,682M	1.43	1.33	1.15	1.23	.47	.35	.16	.25	1398K	1,793K

Site Code

L = LOYAL: adding or upgrading a vendor's system

N = NONLOYAL: adding or upgrading systems of another vendor at a mixed site

D = DISLOYAL: removing all of a vendor's systems, replacing with those of another vendor. If not all are removed, site is NONLOYAL

C = CRACK: new site for that vendor

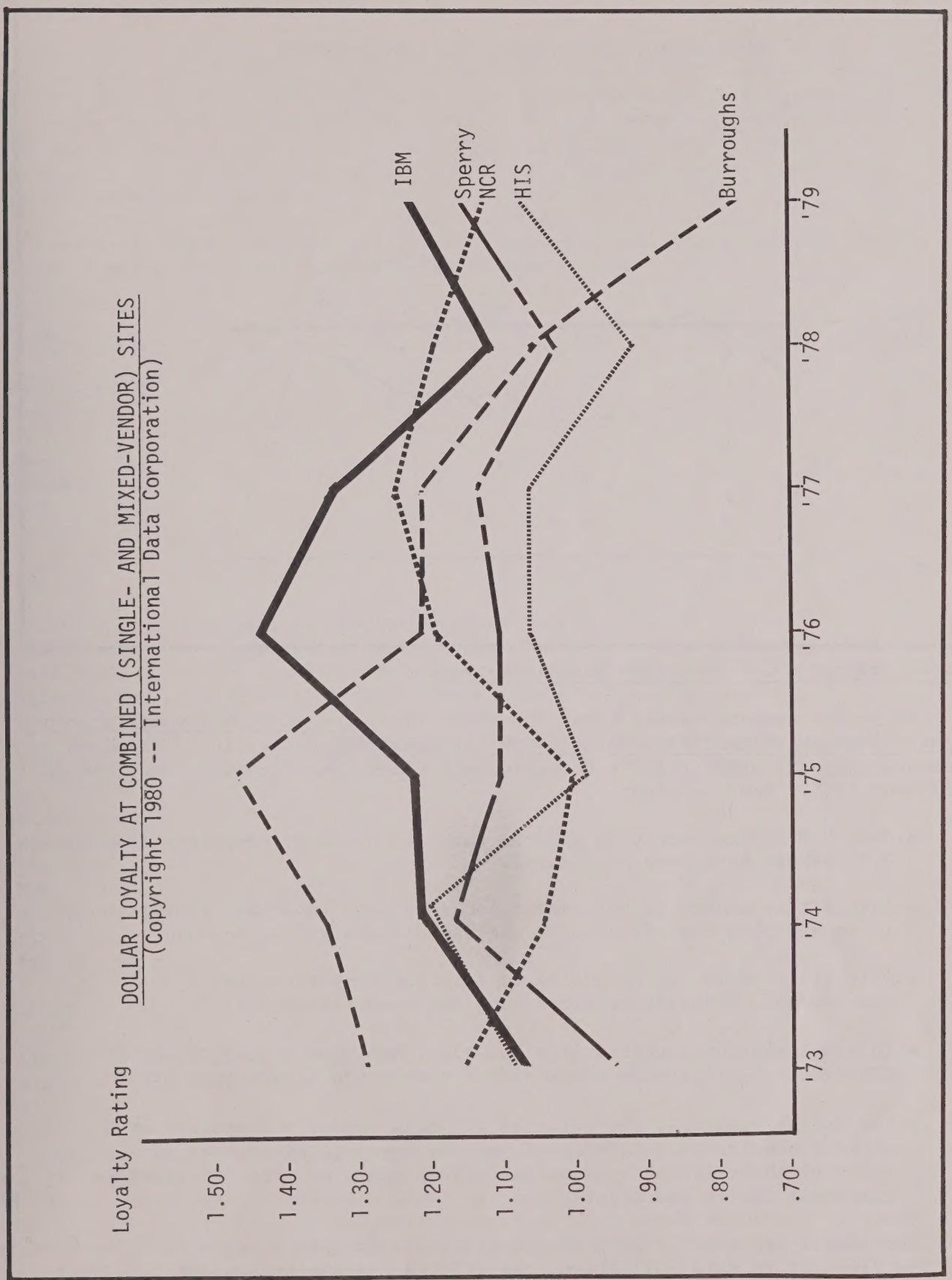
Note: Dollar values for a vendor at a site include all of that vendor's equipment on hand.

Dollar Competitiveness

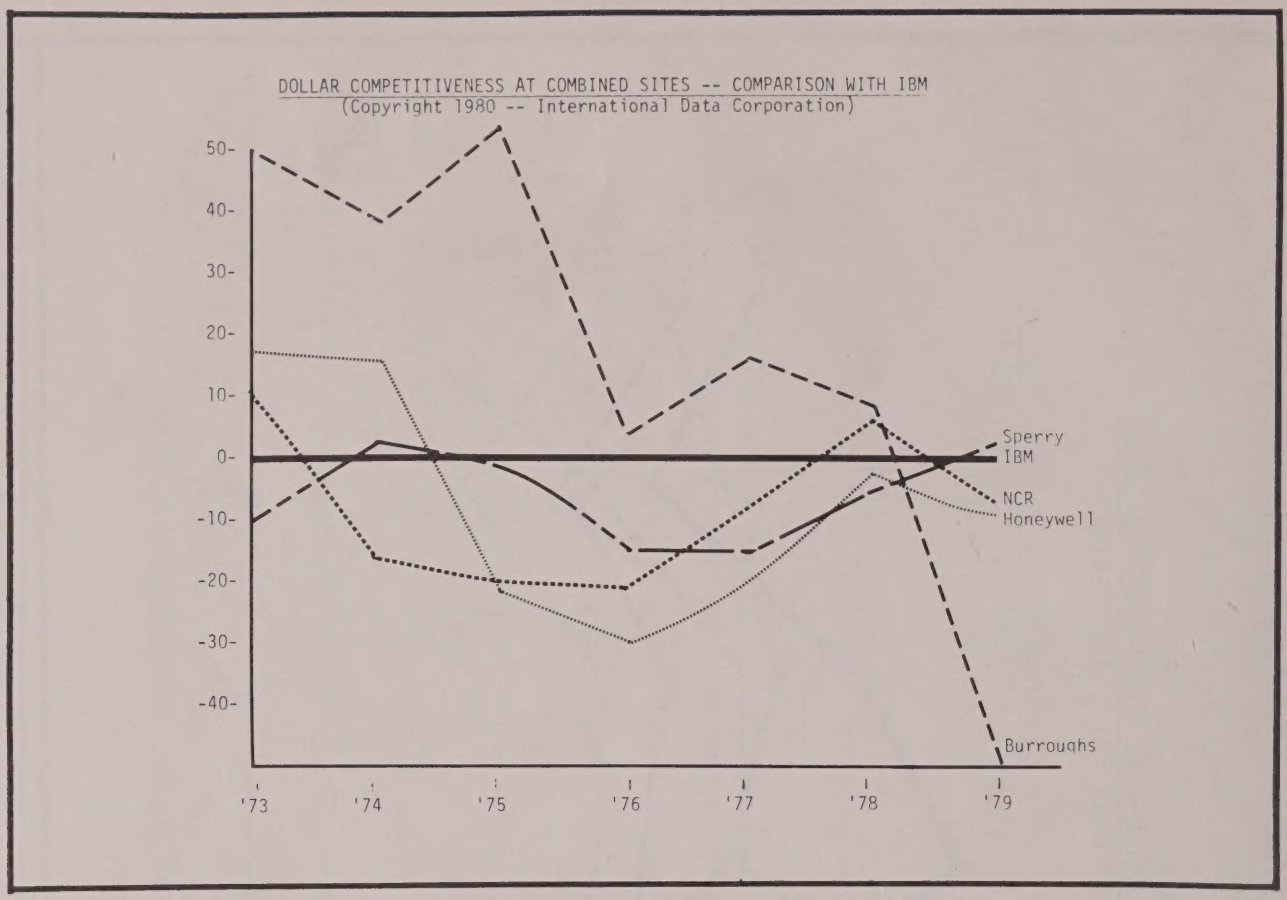
$$\$L = \frac{L(\text{yearend}) + N(\text{yearend})}{L(\text{yearbegin}) + N(\text{yearbegin}) + D(\text{yearbegin})}$$

$$\$C = \frac{C(\text{yearend}) + L(\text{yearend}) - L(\text{yearbegin}) + N(\text{yearend}) - N(\text{yearbegin}) - D(\text{yearbegin})}{L(\text{yearbegin}) + N(\text{yearbegin}) + D(\text{yearbegin})}$$

Reproduction forbidden. Additional copies airmailed same day, $20 each; single copies to non-subscribers, $40. Call 617/890-3700.



Reproduction forbidden. Additional copies airmailed same day, $20 each; single copies to non-subsribers, $40. Call **617/890-3700.**



Caveat emptor . . . the study has limitations

While the numbers mostly speak for themselves, the study has some inherent limitations which must be understood to interpret the data. It is based on computer sites listed in IDC's Domestic Data Files that received computers in 1978 and 1979. Keep in mind:

- Only U.S. sites receiving general-purpose mainframe computers from U.S. makers have been considered.
- Acquisition method is not considered -- a very important limitation in considering the effect of a user's "disloyalty" to a vendor.
- Only sites replacing or adding to existing computers are considered. Entry-level sites have not been scanned.
- In single-vendor loyalty, it's one site, one vote -- regardless of CPU size. Small system users affect some vendors more than others.
- For dollar rankings, the value of all of a vendor's computers at a site is considered. And figures may be based on the number of sites or the value of systems installed. Care must be exercised in comparing tables and charts.

The sample studied for 1979 was considerable (almost 6,714 sites); because of the time lag in data collection, the 1980 sample was inadequate for these purposes.

Reproduction forbidden. Additional copies airmailed same day, $20 each; single copies to non-subsribers, $40. Call **617/890-3700.**

Single-vendor sites versus mixed sites

Traditionally, EDP/IR's loyalty study focused on single-vendor sites. Back in 1967, that's about all there were. But because small systems coexist with big ones at the mixed sites, any loyalty ratings based on the number of sites defy easy interpretation. To bring order to this mixed site chaos, in 1974 EDP/IR computerized the study and began extracting dollar values for migration . . . giving a clearer picture of what happens when a mixed site adds or removes a computer.

The chart below shows the ratio of single sites and single site equipment values to mixed sites and mixed site equipment values:

Vendor	1978 Single No. Sites	1978 Mixed $ Value	1979 Single No. Sites	1979 Mixed & Value
Burroughs	2.3	0.8	2.3	1.9
Honeywell	1.5	0.6	1.3	0.9
IBM	4.7	1.8	3.9	2.5
NCR	4.7	6.1	2.5	3.0
Sperry	1.1	0.6	1.1	0.8
PCM	0.6	0.4	0.4	0.3
Others	0.6	0.5	0.7	0.4
TOTAL	2.6	1.4	2.2	1.9

(Note: This is EDP/IR loyalty study sample data only)

Another way to look at single site importance is in the changes of dollar values at single- and mixed-vendor sites. In the EDP/IR loyalty study, the single-vendor sites grew at a faster rate than mixed-vendor sites.

Vendor	1978 Single $ Change During Year	1978 Mixed $ Change During Year	1979 Single $ Change During Year	1979 Mixed $ Change During Year
Burroughs	5.2		(-10)	
Honeywell	2.2		(-21)	
IBM	9.1		6.3	
NCR	(-87)		76.7	
Sperry	(-22)		2.2	
PCM	NA		.6	
Others	0.7		7.5	
TOTAL	5.1		6.6	

(Note: A negative number means a vendor's dollar value of equipment at mixed sites actually dropped.)

Overall, single-vendor sites in the sample ended with a net addition to the "if sold when installed" value of equipment on hand of $2.2 billion in 1979; the mixed vendor sites had a net addition of $340 million. Remember that the same dollar buys a lot more processing with a new computer . . . and the "if sold when installed" value of a computer is not its market price.

Some notes:

Reproduction forbidden. Additional copies airmailed same day, $20 each; single copies to non-subsribers, $40. Call **617/890-3700.**

- "Other" computers appear to be generally add-ons, often at sites with many mainframes.

- The long-term trend is for more mixed sites. In 1979 the number of mixed sites grew 41% while single sites grew only 23%. But in dollar values, mixed sites grew only 40% to single site growth of 78%. Quite a change from a while ago when single-vendor sites increased in value "seven times more than mixed sites" (EDP/IR,Jan.21,1977).

The importance of the dollar

While the temptation is strong to look only at single-vendor site loyalty -- it's the simplest chart and simplest table -- a mere meaningful story may be told in the "dollar" figures. After all, if an IBM 4300 replaces a more expensive 145, is a user really loyal? By site count, he would be. But by the "dollar loyalty" he wouldn't be.

The formulas for dollar loyalty and competitiveness are shown on page 6 along with the table. Keep in mind that dollar values for a vendor at a site will include whatever computers are on hand with his nameplate on them -- not just the CPU that was put in during the year. The value of a vendor's gear at a site will be different at yearend from the beginning of the year. In a nutshell:

- Dollar loyalty -- compares the value of loyal sites at the end of the year to the starting customer base of a vendor. It doesn't track sites new to the vendor.

  Thus, a dollar loyalty rating of 1.30 means a vendor's starting customer base upgraded during the year until it was 1.3 times as big as it was (or 30% bigger) in the beginning.

- Dollar competitiveness -- compares the total change in the value of a vendor's gear at all sites to the starting customer base ... thus, includes "crack" sites where a vendor was not present at year-beginning.

  A dollar competitiveness rating of .40, then, since it includes the sites gained during the year, means that a vendor's year end customer base is 40% bigger in value than the year-beginning customer base. A not-so-loyal base can be compensated for by gaining new sites.

(For mixed sites where a rival vendor's computer was the one replaced -- the so-called "nonloyal" sites -- and some but not all of a vendor's systems are removed, the dollar ratings reflect the change in a vendor's base. This is covered by the formulas through the use of yearend and year-begin values. Thus, it's to a supplier's advantage to be the one upgraded at a mixed site.)

Remember, though, that the ratings reflect the if-sold value of a vendor's equipment at the time of installation . . . depreciation and acquisition method are not accounted for. A user's loyalty must therefore be considered to include the attractiveness of more than just the hardware or service involved. And loyalties -- since acquisition method is not measured -- don't have a direct bearing on a vendor's profitability.

Reproduction forbidden. Additional copies airmailed same day, $20 each; single copies to non-subsribers, $40. Call **617/890-3700.**

EDP/IR'S FIRST LOYALTY STUDY FOR COMPUTERS ON RENT OR LEASE FROM MAKER

Responding to criticisms that the perennial "Gray Sheet" loyalty study mixes apples and oranges when it compares equipment that is purchased and equipment that is leased or rented from a manufacturer, this year EDP/IR did a separate loyalty run for equipment that was only on lease or rent from the manufacturer.

The object, of course, is to show where loyalty might have a more direct bearing on a vendor's revenue stream . . . and not track the comings and goings of system's that have already done their dollar-garnering job.

All the same limitations apply here as in the main loyalty study with two additional notes:

- All systems at a site not on rent or lease from the manufacturer are dropped from the study. Thus some multivendor sites could become single-vendor sites for the sake of the study.
- A system that is on rent or lease that is then purchased is dropped from the study.
- The sample is smaller (1,950 sites), about 30% in terms of numbers of sites of the larger loyalty study.

Differences between the studies

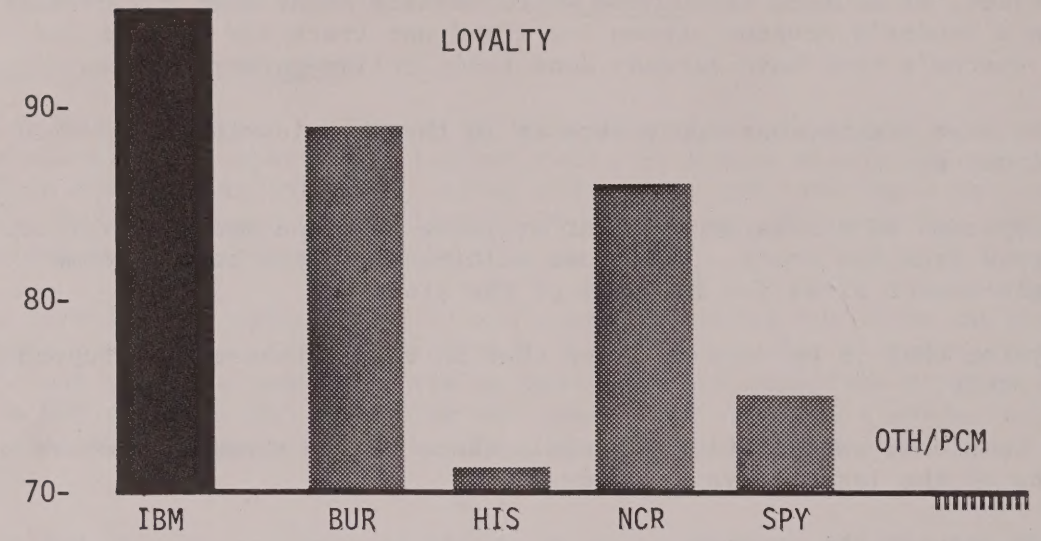
Comparing the main loyalty study with the "rent or lease" study prompts the following observations:

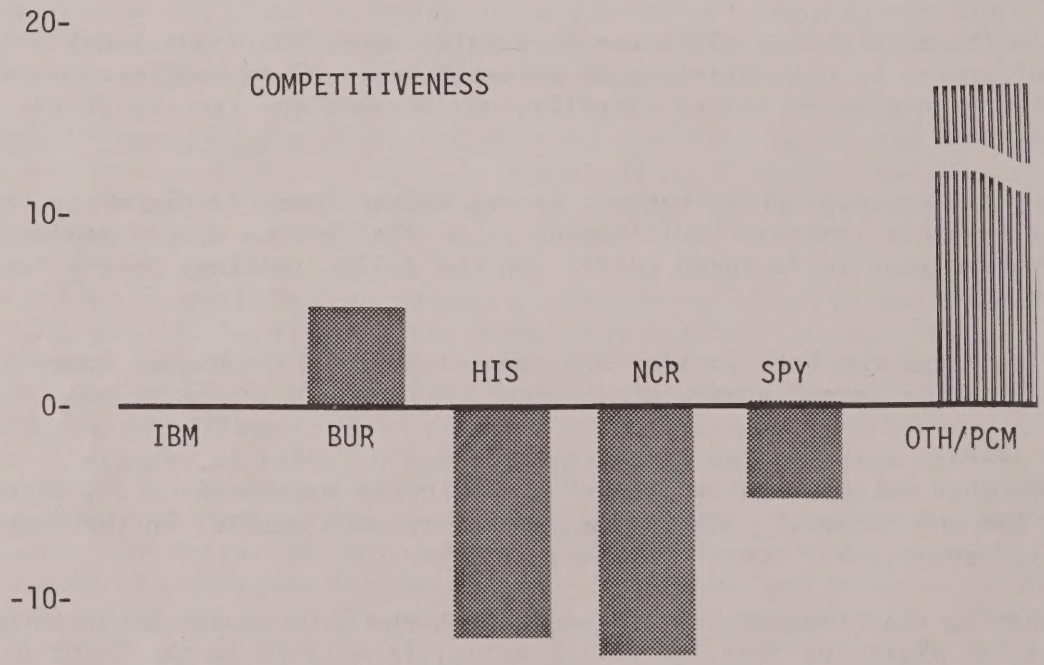
- As in the main study, IBM leads in loyalty among the traditional mainframers; is only middling in competitiveness. As mentioned on page 2, there seem to be strong correllations between the results of the two studies.
- Honeywell fares slightly better; Sperry Univac comes in higher in the single-vendor rankings (multivendor sites that become single-vendor when purchased gear is factored out?). In the dollar rankings Sperry does very well.
- The rankings for both loyalty and competitiveness are higher overall in the "rent or lease" study.
- The average system value of systems removed or added is roughly comparable in the "rent or lease" study to the main study . . . except for IBM and "Other." IBM system values are much smaller in the "rent or lease" study; the "Other" values are bigger.
- Comparing the "rent or lease" sample with the main study sample shows that IBM migrating base, by dollar value, is only 7% in the "rent or lease" study. The other vendors, except PCMs, are much higher. Thus IBM is even less vulnerable.

The charts and tables on the following pages tell the loyalty and competitiveness story by themselves. Readers are advised, once again, not to take them out of context.

Reproduction forbidden. Additional copies airmailed same day, $20 each; single copies to non-subsribers, $40. Call **617/890-3700.**

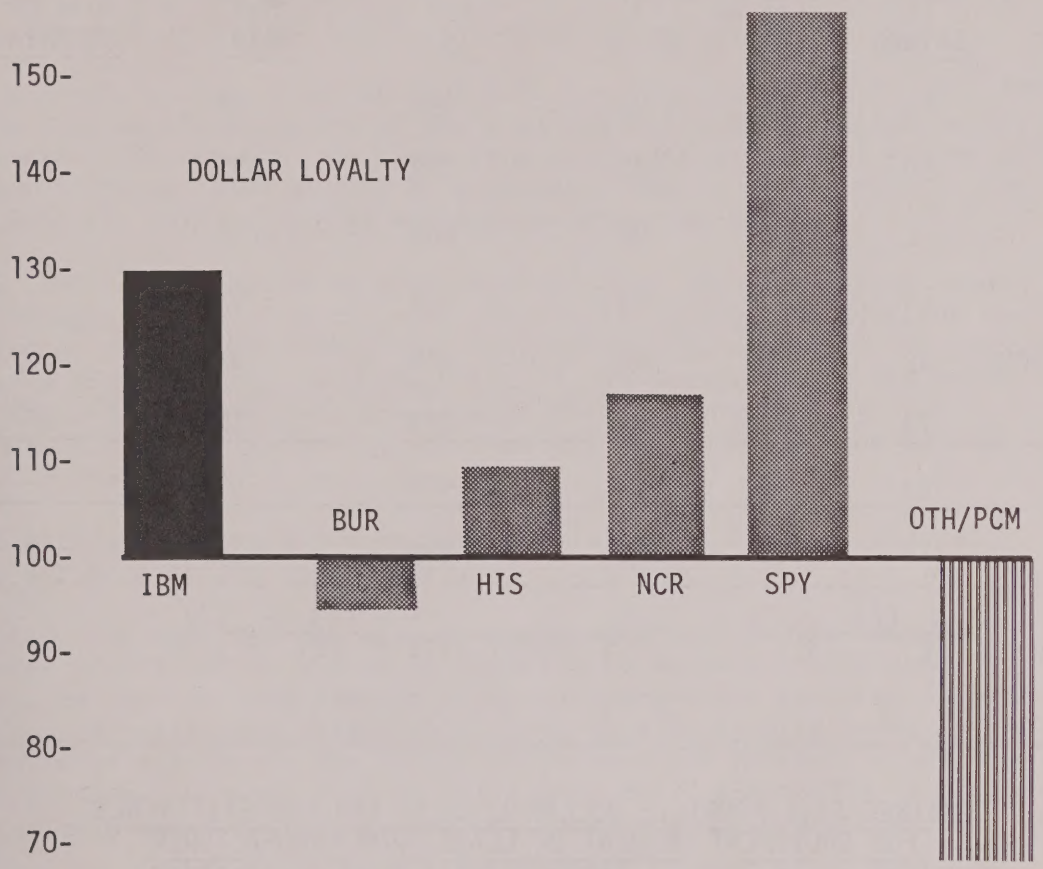
LOYALTY PATTERNS AT SINGLE-VENDOR SITES:
EQUIPMENT ON RENT OR LEASE FROM MANUFACTURERS
(Copyright 1980 -- International Data Corporation)

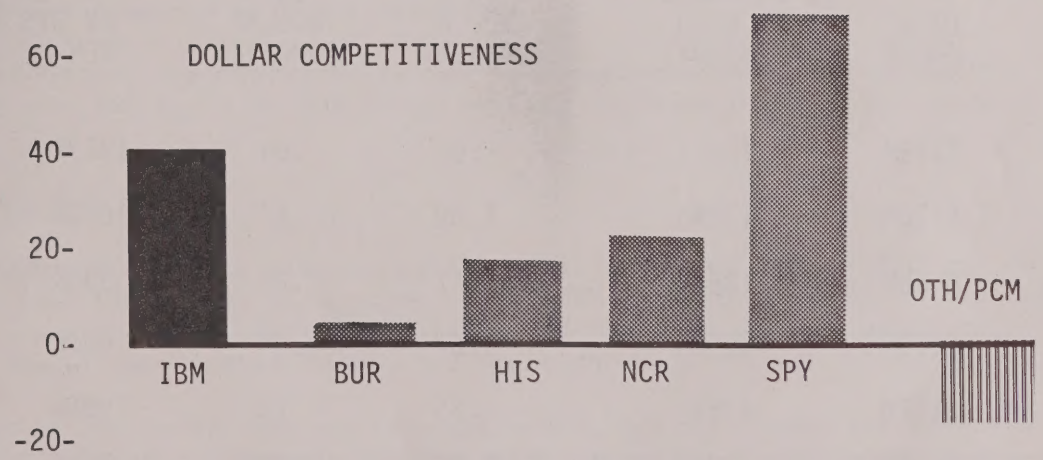




Reproduction forbidden. Additional copies airmailed same day, $20 each; single copies to non-subsribers, $40. Call **617/890-3700.**

1979 DOLLAR LOYALTY AND COMPETITIVENESS PATTERNS:
EQUIPMENT ON RENT OR LEASE FROM MANUFACTURERS
(Copyright 1980 -- International Data Corporation)





Reproduction forbidden. Additional copies airmailed same day, $20 each; single copies to non-subsribers, $40. Call **617/890-3700.**

SINGLE-VENDOR SITE LOYALTY FOR EQUIPMENT ON RENT OR LEASE FROM MFG

(Copyright 1980 -- International Data Corporation)

	1979 SITES (1) GAINED	(2) LOST	(3)=1979 (3) LOYAL	LOYALTY FOR 1979	COMPETITIV. FOR 1979	% NO. SITES TO # OF SITES IN MAIN STUDY
BUR	16	11	90	89%	5%	28%
HIS	10	17	41	71%	-12%	28%
NCR	1	15	90	86%	-13%	31%
SPERRY	14	18	54	75%	- 5%	44%
OTHER & PCM	32	9	20	69%	79%	15%
SUBTOTAL	73	70	295	81%	1%	27%
IBM	42	45	684	94%	0%	25%
TOTAL	115	115	979	89%	-	26%

$$\% \text{ LOYAL} = \frac{(1)}{(2) \quad (3)} \qquad \% \text{ COMPETITIVE} = \frac{(1) - (2)}{(2) + (3)}$$

COMBINED SITE PROFILE: DOLLAR LOYALTY AND COMPETITIVENESS FOR EQUIPMENT ON RENT OR LEASE FROM MANUFACTURER

(Copyright 1980 -- International Data Corporation)

	1979 D+L+N	(% COMPARED TO MAIN STUDY)	1979 DOLLAR LOYALTY	1979 DOLLAR COMPETIT	1979 AV SYS VALUE REM	ADD
BUR	$135M	(26%)	.95	.04	$813K	$731K
HIS	$110M	(34%)	1.09	.17	1027K	1247K
NCR	$ 45M	(36%)	1.17	.22	330K	375K
SPERRY	$113M	(25%)	1.57	.68	982K	1690K
OTHERS/PCM	$107M	(25%)	.65	-.18	1080K	462K
IBM	$623M	(7%)	1.30	.40	665K	830K

NOTE: FOR SITE CODES AND DOLLAR FORMULAS SEE PAGE SIX

Reproduction forbidden. Additional copies airmailed same day, $20 each; single copies to non-subsribers, $40. Call **617/890-3700.**

"Brand loyalty" may give some idea of the overall trends in the mainframe user base, but it misses all the nuances of migration. What is happening within that base, vis a vis the product line, price performance, etc. A totally different approach is called for in studying user motivations.

In a separate study, International Data Corporation surveyed 1,000 IBM and plug compatible mainframe users to get a picture of U.S. migration activity in the IBM world. IBM now has offerings ranging across nearly all its mainframe product spectrum, so there should be a sizeable amount of activity in the future. From the survey, EDP/IR can extrapolate some trends:

- The 4300s are expected to mark the demise of the 360, luring those users who thus far had resisted the 370/138 and 148 in addition to the other 370s. The 4300s will also take quite a toll on the low end of the 370 base, up through the 135 at least. While the users of the 148 size machines are also offered alternatives by the 4300s, their base is newer, and thus may take a bit longer before abandoning the 370 ship.

- IDC estimates there are more 4300s installed in the U.S. than all the 360 base at the end of 1980.

- At the high end, the new bargain-basement priced 3033S, with its choice of DOS/VSE or MVS/SE is expected to further induce some 370 users to upgrade; the concept of field upgradeable machines is not to be underestimated, especially since this is finally being offered by Big Blue. The 3033N, which recently received a healthy 15% performance boost with no price increase, is actually the real bargain in the 3033 family when one considers price/performance.

- There may be some consolidating in the number of large systems installed, if users swap their 303X for the 3081 dyadic processor. It remains to be seen just how many of these new systems will be add-ons compared with replacements.

The 4300s are also being installed as distributed processing systems, virtually net additions to the base, as well as being used as replacement systems.

Year of the PCM

IDC figures indicate plug compatible mainframes will have attained no less than 5.6 % of the number of systems of the IBM base in the U.S. at the end of 1980, up from 3.8 % at the end of 1978. Had the 4300 not occurred, the PCMs probably would have posted an even stronger showing.

But with the prime rate soaring above 20%, EDP/IR thinks the advantage will definitely go to the manufacturer that can offer leases, and we all know that IBM has the cash, despite its recent borrowings, to be able to do this. Although there are some minor exceptions, such as National Semi carrying a small portion of its own paper, the PCMs generally are dependent on the third party leasing business.

Reproduction forbidden. Additional copies airmailed same day, $20 each; single copies to non-subsribers, $40. Call **617/890-3700.**

• PHILIPS IS COMMON THREAD IN TWO PI, FOUR PHASE proposed union. Four Phase has agreed in principle to acquire Two Pi, maker of plug compatible CPUs in the 370/138-148 and 4331 range, as a solution to its quest for a more powerful processor in its systems. Two Pi is a wholly-owned subsidiary of U.S. Philips, which is related to N.V. Philips, which happens to have some muscle as Four Phase's overseas distributor. Two Pi's founder, Jared Anderson, recently announced his intention to depart the operation; he no longer considered it challenging to his entrepreneurial bent. Whether Four Phase will consume Two Pi's entire production remains unknown. Two Pi was constructing a sizeable addition to its plant last fall.

• NORTHERN TELECOM SPLISHES AND SPLASHES and takes a bath in writedowns stemming from its acquisition of Sycor and Data 100, which proved to be little more than shells after their top management exited. Northern wrote down $1078 million in goodwill and technology investment and $113 million charge for inventory writedown and other provisions. For the fourth quarter and year, Northern Telecom's earnings will be slashed $220 million, which translates to a "sizeable loss" for both periods. However, Northern Telecom has Bell Canada's muscle behind it, and could yet prove a hefty competitor in the automated office arena.

• MA BELL HAS TO WAIT -- The Federal Communications Commission told Bell to wait five months regarding its proposed rate changes for WATS, which included reductions for most of its users and sharp hikes for the 8% of customers that use the service heavily. The changes were scheduled to go into effect Jan. 1. FCC also approved a new accounting procedure that theoretically is supposed to prevent cross subsidization of costs between regulated and unregulated products, a bone of contention among competitors.

• SIGNS OF ECONOMY -- International Computers Ltd. (ICL) laid off about 200 from its U.K. workforce, despite receiving a large government contract. Texas Instruments has adopted shorter work weeks for about 15,000 employes, citing softness in semiconductor and consumer products areas.

• LONG TERM BELT TIGHTENING is underway at Burroughs Corp., reflecting the presence of new chief executive W. Michael Blumenthal. On the surface, it looks similar to what Anderson did at NCR -- the calculator and adding machine products will be dropped; and changes in inventory valuations will include provisions for obsolescence. In addition, Burroughs has axed its belated scientific processor, now not competitive in the marketplace. Also, the Motown maker cites plans to consolidate several smaller plants and close some small overseas subsidiaries. If all programs are adopted, they could reduce 1980 earnings by about $125 million after taxes. At the same time, though, Burroughs is expanding -- in areas such as custom semiconductor fabrication. Blumenthal recently held discussions in Japan regarding joint ventures.

• COMMODORE LANDS PLUM in the form of an exclusive license to reproduce, sell and distribute Visicalc outside the U.S. in German, French, Spanish, Italian, Dutch and Danish. Visicalc has hit the $1 million mark in sales for its creator, Personal Software Inc. If Commodore so chooses, it could use this license as a lure to buy its desktops rather than make it available on other brands.

Reproduction forbidden. Additional copies airmailed same day, $20 each; single copies to non-subsribers, $40. Call **617/890-3700.**

DEC 10 1980

EDP industry report

• THE INTERNATIONAL DATA CORPORATION'S NEWSLETTER FOR EXECUTIVES CONCERNED WITH THE ELECTRONIC DATA PROCESSING INDUSTRY

"THE GRAY SHEET" NOVEMBER 28, 1980 • VOL.16,NO.14 P.J. McGOVERN,PUBLISHER

New Wave for 80s

DISTRIBUTED INTELLIGENCE NETWORKS EMERGE; CHALLENGE MINIS, DDP SYSTEMS

In the 70s we had the mini challenging the mainframe; in the 80s we have the micro packaged as a system, equipped to challenge the mini.

Networked systems announced recently by new companies such as Apollo Computer Inc. and Convergent Technologies aren't faster than speeding bullets or able to leap buildings in single bounds, but they do indeed typify the breakthroughs in processing power, functionality and cost implicit in the decade of the '80s. Should be interesting times ahead.

Just think: the approximate power of a PDP 11/34 or IBM 4331-1 (Convergent); PDP 11/70 or Prime 550 (Apollo) in the hands of individual users at per station costs of $10K to $30K. Mini makers, beware.

This breed of system isn't well defined yet, and probably owes a lot to Datapoint and its Arc concept. There are some innate ingredients as well as some variables espied by EDP/IR in distributed intelligence networks:

- Networking on a local and eventually remote basis is a fundamental architectural precept as is graphics capability.
- 16-bit and eventually 32-bit logic chips -- usually in multiple form -- are the guts of the system.
- A CPU per person with each station containing all its own logic. Resources, such as expensive peripherals and gateways, are shared. Data base management may be centrally located or distributed.
- Accommodations are generally made for Ethernet, if and when it arrives in cost-effective fashion with the Intel chip, and for use of other gear via Multibus.
- File sharing is transparent to the user. A file name determines if the file is stored locally or in common storage, thus users can easily add more workstations to a network, or go from standalone to a network, without reprogramming.

EDP Industry Report is published in annual volumes of twenty-four issues each by International Data Corporation, Post Office Box 915, 214 Third Avenue, Waltham, MA 02254. Entire contents ©1980 by International Data Corporation. **Director,** James Peacock; **Editor,** Molly Upton; **Census Editors,** Paul Arabasz, Lloyd Cohen; **Contributing Editors,** Dave Dillman, John Gantz, Gerard Hallaren, Nancy Scull, Carol Weiszmann; **Circulation Manager,** Mary M. Trayte. Patrick J. McGovern, Chairman, International Data Group, John P. Breyer, President, International Data Corporation. Editorial ideas and information are researched and formulated by the editorial staff. Information and opinions in each issue are based on the best information available, but their accuracy and completeness cannot be guaranteed. **Subscriptions:** One year, $245; three years, $590. Single copies priced as indicated on inside pages. Prices for multiple copies on request. Reproduction without written permission is completely forbidden. Telex 92-3401; Telephone **617/890-3700.**

Networking is an amorphous word at best. As intelligence becomes more affordable, we will see more configuration variations. There will be networks of peers with supposedly homogeneous units as well as those with specialized stations. There also will be hierarchical, cluster-type systems with one unit, linked via multidropped lines to workstations, handling data base management and communications to other nets. It is linked via multidropped lines to workstations. Apollo has chosen the peer to peer net. Convergent, having watched Xerox's developments, concluded that stations in a network evolve into specialties and chose the cluster approach. Xerox's recently announced Ethernet products have specialized functions. See page 7.

One of the wonderful things about this industry is that gaps evolving from the economics of technology don't remain gaps for long. On the West Coast, folks from Intel and Xerox Advanced Systems Division combined to form Convergent Technologies in Santa Clara, Calif., while a group from Prime Computer along with some DEC and DG talent formed Apollo Computer in North Billerica, Mass., to court the time-sharing market with micro prices.

The business plans of the two companies reflect the founders' backgrounds and perceptions of where they want to position their systems in the markets of today and tomorrow. Technology really isn't at issue here, despite the clever moves apparent; what is at issue is how to present a useful system to the user at an acceptable price.

The pitch at the Apollo press conference sounded reminiscent of the early Prime days, but lessons have been learned and more attention is being paid to the importance of the marketing function. Calling itself a "technology driven, marketing oriented company," Apollo plans to spend 35% of its revenues on the marketing/support functions with over half its employees in marketing/sales. Apollo is blatantly courting the scientific/engineering community of timesharing users with a system that costs between $20K and $30K.

Convergent is going the path of an OEM supplier, as did Intel, with a system costing about $8K to $11K/station. Typical of its systems houses are those with experience in DEC and Prime systems who want a low-end product. They expect to put their industry-specific applications on the system as well as sell it as a small business, hybrid DP/WP system.

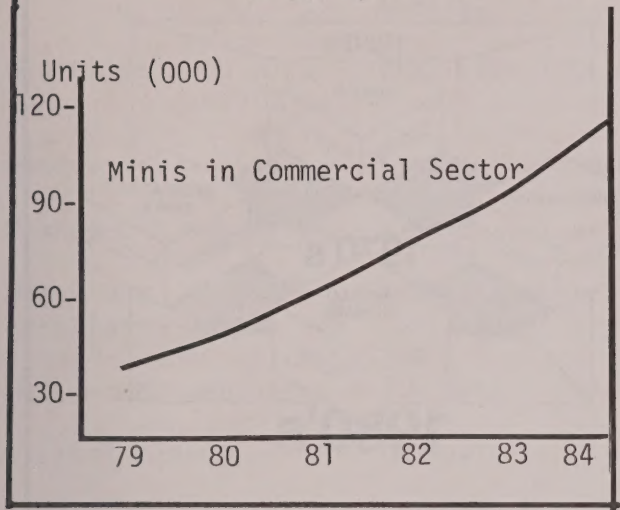
Perhaps because Convergent's system has been under development longer, it has more of the tools and design elements that appeal directly to general end users, to say nothing of the systems houses. For instance, Convergent's "text editor" is really a full-blown word processing system, needing only very minor changes to rival some of the best on the market. There's a data base management package as well as 3270 emulation available.

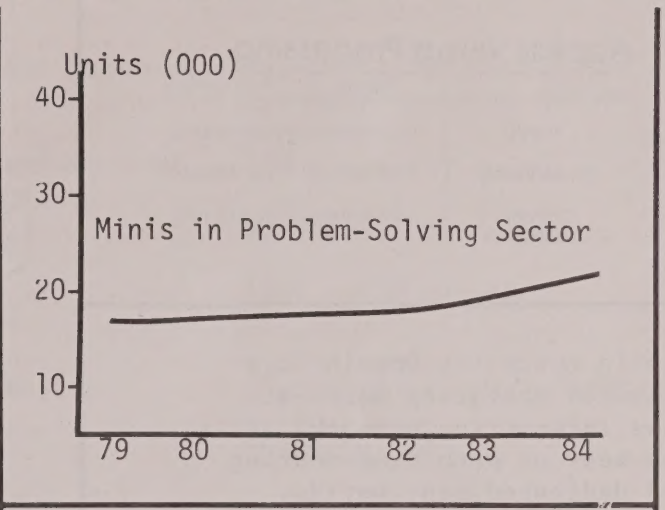
Much attention has been paid to the tenets of ergonomics, making the system comfortable to use, as well as to packaging. Floppies fit like Legos into racks that stack up against each other vertically. The 15 in. screen offers 132 characters by 34 lines, or in large type, 80 characters across. Special characters and graphics symbols can be stored in memory. Characters are 7 by 15 pixels, so are well defined.

The screen is landscape shape -- width exceeds height -- because studies show that people like to look over their screens; but this does preclude a full page layout of text. The screen tilts and swivels.

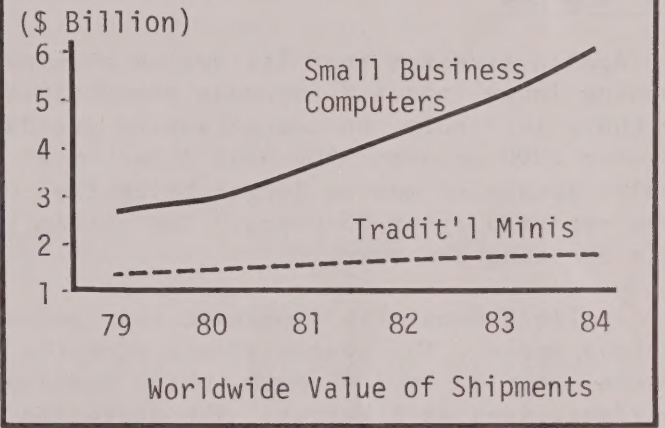
Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

WORLDWIDE SHIPMENTS
(Copyright 1980 -- International Data Corporation)





Ultimately, Apollo will be courting the general user as well, EDP/IR suspects. Apollo vice-president of engineering, Mike Greata, cited the portrait shape screen -- height exceeds width -- full page screen as lending itself to editing and electronic mail use. Its screen layout has 1,000 by 800 pixels and is bit mapped, a bit in memory for every pixel or point on the screen, thus allowing very fine graphics resolution.



Admittedly, Apollo and Convergent aren't the only entries in the CPU per person arena. Datapoint pioneered the concept with Arc. There are numerous others, depending on where one draws the lines. Three Rivers in Pittsburgh, Pa., has people from Carnegie Mellon and is building standalone systems as its first effort. Still others are Onyx, in Cupertino, Calif., and Artelonics of Santa Clara, which has an 8086- based system and is funded by a subsidiary of Shell Oil, Canada. Then there's Nestar of Palo Alto, which provides networking glue for Apple II desktops. And Zilog has announced several elements. It's unlikely that these moves will go unnoticed by the more established folk.

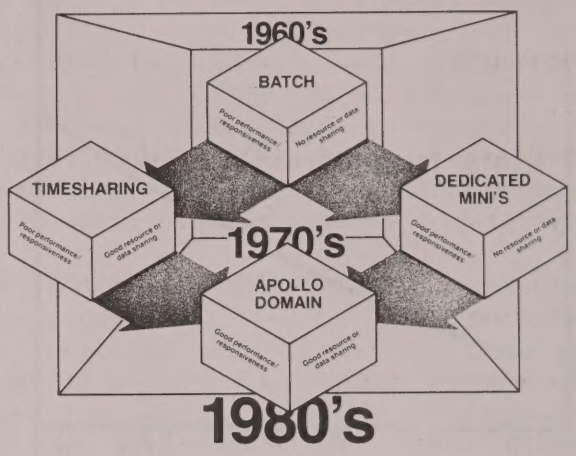
What market shares will they impact? Clearly, Apollo for the near term intends to impact the minicomputer problem solving base, which IDC sees as one of the slower areas of mini growth. Apollo, Convergent and others will affect the commercial aspect of minicomputers, whose worldwide shipment rate should grow over 70% between 1979 and 1984, according to IDC. In addition, the small business segment, which should see shipments rising more than 50% between 1979 and 1984, will also note some new competition. So the game is wide open. Such systems won't begin to show up in numbers until probably second quarter, 1981 at the earliest. Although Convergent talks of shipments this year, it takes a while for systems houses to put their software on units and get them out the door. Apollo is scheduled to begin shipments the end of March to Harvard and Rutherford (England) computer science departments.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

THE WORLD ACCORDING TO APOLLO

Access Versus Processing

	Access	Processing
Batch	(centralized)	(centralized)
Timesharing	(distributed)	(centralized)
Domain Processing	(distributed)	(distributed)



Apollo touts its Domain (distributed operating multi-access interactive network) as the best of both time-sharing and dedicated mini worlds.

What and how

Apollo stresses that its system eliminates the 3 a.m. nights at the system running large jobs and improves productivity by offering fast response times -- there is, truly, no comparison to speeds of its system vs anything connected over 1200 or even 9600 baud lines -- as well as the ability to share data. Apollo speaks of man no longer being the computer's servant; the roles have been reversed after 25 years. The system is sufficiently inexpensive to stand idle awaiting the user.

Apollo's Domain is a peer to peer network with resources distributed at various nodes. The system starts with the notion of a distributed storage system, coupled by a network, which operates at the blitzing speed of 10 Mbit/sec, same as Ethernet. The packetized network has one token, thus one message is sent at a time. But at 10 Mbit/sec users don't notice there's only one message at a time, Greata said. The probability of problems such as contention are reduced on a system basis. The operating system kernal is optimized to service a single user. Apollo has taken steps to ensure that it is easy to transport large time-sharing programs onto its system.

Apollo contends that there aren't any limitations on the size of a system since each workstation has its own computing power. Apollo's typical computational node with 256K and no disk is $24K; a node needed for starting a system has a 33 Mbyte Winchester, 1 Mbyte floppy, and costs $34K.

Convergent's Multifunction Workstation system also has all the logic necessary for operation in the individual stations, but the operating system is split between the Shared Resource Processor (SRP) and the workstations. Ben Wegbreit, vp of software engineering, calls it a hierarchical system because the data base management system is in one spot, the Shared Resource Processor, home also of controllers for common disks. By the end of 1981 the gateway facility that can connect to other nets will also reside in the SRP. The applications programs do not notice the split in the operating system. Having "locally centralized" data base code enables the system to prevent lockouts, concurrencies and other problems that can happen with distributed data bases, according to Wegbreit.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

FEATURES

	Apollo	Convergent
Bit mapped	Yes, with 128K for screen	No; character mapped now; bit mapping later option
Windows	Yes; multi-command environ.	Yes
Memory-CRT bandwidth	50 MHz	50 MHz
Min.- Max. memory/ workstation	256K - 1 Mbyte	128K - 256K bytes
Min. - Max net disk	33M byte - 150 Mbytes	10.5 Mbyte - 116.5 Mbyte
Virtual memory	16 Mbyte	16 Mbyte
Languages	Fortran 77, Pascal Others coming	Fortran, Pascal Cobol, Basic, Assembler
File location determined by name	Yes	Yes
Share other workstation files	Yes	No
CPU chip(s)	Two Motorola 6800s, FP	Intel 8086, 8087 available
Multibus available	Yes	Yes
Network	Ethernet or 10 Mbit/sec	Ethernet or 615 Kbit/sec
Gateway node	Future	End of 1981

For network communications, Convergent's SRP has a dedicated communications controller that polls the individual stations for messages. The system uses two standards, the Adccp protocol and RS 422, which makes for a simple, standard system, he said. Network transmission speed can be 615 Kbit/sec or 307 Kbit/sec. The latter permits lines of over 600 feet in any direction from the SRP, Wegbreit said.

Convergent gives a maximum system size of 16 workstations; Wegbreit acknowledges users will want to double the stated specifications.

Prices

Convergent has a lower entry point than Apollo, partly because it is configurable without hard disks. There are three classes of Convergents: standalone, mini cluster (up to four stations) and cluster (up to 16 stations, requiring an SRP). The smallest Convergent CT-1111-1 single workstation with 128K and 1M byte floppy costs $11,990. A CT-1121-1 workstation with 128K and 10M byte Winchester, 1/2 Mbyte floppy, is $18,500. The largest system currently offered is the CT-1121-4, four stations with Winchester, floppy, which costs $40K. The CT-2000 series will include the SRP.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

APOLLO

Incorporated February 14, 1980 with $1.75 million from Sutter Hill, Hellman Gal, and Venrock. September 30, working models; October 16, first order; November 12, $2.65 million second round financing from originals plus Aetna and Graylock. January 6, 1981, benchmarks; March 31, shipments.

Plans to have revenues of several million in 1981, $100 million by 1985, $1 billion within decade. Going for market share, with over half of employees in marketing/sales and plans to spend 35% revenues in support of this area. By end of 1981 will have sales/service in Phila., LA., Chicago, Dallas, Boston, NYC, and UK, Germany and Canada with a joint venture in Japan. There will also be third party software agreements (shades of Prime), joint marketing, acquiring of market specific packages and sales to systems houses.

The lineup -- Bill Poduska, president, ceo; former founder, Prime Computer, and vice-president, engineering.
Charles Spector, executive vice-president, chief operating officer; former management of various groups at DEC.
Dave Nelson, vice-president, systems development; former Prime director of research and also involved with VAX at DEC.
Mike Greata, vice-president, engineering; former Prime head of advanced systems development group.
Robert Antonuccio, vice-president, manufacturing; former Data General general manager of Southboro plant.
Gerald Stanley, vice-president, marketing; former DEC group marketing manager, medical systems group.
David G. Lubrano, vice-president, treasurer; former senior vice-president, National Medical Care.

CONVERGENT TECHNOLOGIES

Formed August, 1979, first round netted nearly $3 million from private investors; second round July 1980 with most initial investors plus venture capital firms garnered $6 million. Venture firms include Hambrecht and Quist, Bay Investment Corp., and Cable and House. Convergent hopes to have revenues of $30 million by the end of 1982. Intends to be OEM supplier.

The lineup -- Allen Michels, president, former general manager of Intel's microcomputer systems division, previously at DEC.
Robert Garrow, vice-president, engineering; former director of engineering at Intel's microcomputer systems division. Started single board computer business, codeveloper of Multibus.
Kal Hubler, vice-president, sales; former customer marketing manager at Intel's microcomputer systems division, previously at DEC.
Ben Wegbreit, vice-president, software engineering; former manager of Advanced Office Systems in the Xerox Advanced Systems Division.
Pauline Alker, vice-president, marketing; former mainframe product marketing manager in Intel's microcomputer systems division, previously with Amdahl.
William Harris, vice-president, manufacturing; formerly in charge of manufacturing and production of Hewlett-Packard's 1000 series.
Merrill Newman, vice-president, finance; former vice-president, finance at Shugart Associates and Coherent, Inc.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

DATAPOINT, XEROX EXPAND LOCAL NETS

Datapoint, pioneer in the concept of linking distributed files together throughout a local system, has announced a bigger engine and new operating system for its Attached Resource Computer (Arc) concept. Xerox, which has made a lot of noise attempting to get its Ethernet concept for local network transmission adopted as a standard in conjunction with Intel and DEC efforts, has unveiled plans for interfaces to its Ethernet.

The Datapoint Arc concept gives users of a coaxial network the capability to share resources scattered throughout it without worrying about where the data is and interfacing details.

The new 16-bit engine, dubbed the 8800, can have up to 1 Mbyte main memory versus the previous processor limit of 256K, and uses the new Resource Management System (RMS) operating system, which enables dumb terminals to be linked to the network and perform a variety of functions. Thus Datapoint is acknowledging the need to lower the cost of network operation but at the same time could be said to be taking a step backward by putting more operations overhead back in the CPUs rather than out at the point of use. Without disk, the 8800 version of a 256K application processor costs $42,500. With 202 Mbytes disk, a standalone unit costs $88K.

The RMS software offers the same languages as Datapoint's DOS version -- Cobol, Databus and Assembler -- but isn't totally compatible with DOS. With Cobol, users can recompile; some reprogramming is necessary with Databus. The system is set up so that both the new 8800 processor with RMS and older processors with DOS can be connected to the same network, thus giving users some breathing time while converting files. RMS takes 64K of memory and runs on most Datapoints. The 8800 gets new disk drives; the minimum is 135 Mbytes fixed and 67 Mbytes removable, and leases for $730/mo on a one year term.

Xerox has come out with a raft of goodies that users need in order to implement an Ethernet coaxial network. Interestingly, hidden in the release, and not available separately, is a small brother to the 5700 electronic printing system, with speeds up to 12 page/min or 3,000 word/min. The device, known only as the 8000 NS print server, costs $29,995. It has the basic same type of laser innards as the 5700 but lacks the niceties such as the touch control screen. It looks like what's needed to replace multiple daisy wheels.

Xerox servers come in various forms, such as communications, print, and file, and are the interfaces containing Ethernet traffic recovery algorithms as well as store and forward capability. Depending on usage, they can provide the interface for more than one device. Traffic on the Ethernet travels at 10 Mbit/sec but from the server to the device at 9,600 bit/sec.

Servers are not cheap. The 8000 NS communications server, the 8071, costs $20,995 and has three functions. It handles remote 850s and 860s to exchange electronic mail with 860 systems on an Ethernet and acts as the gateway connecting geographically separate Ethernets over phone lines. It also enables users to refer to file and print servers on any of the connected Ethernets by textual names rather than by internal network addresses. Extra ports, used with the 8071, may be added; four ports cost $13,995. The file server is a central electronic mail depot, with processor, disk and terminal ranging from $20,995 for 10 Mbytes to $27,995 for 58 Mbytes.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

• ADAPSO SINGS BIG BLUE SERENADE ... Or is the Association of Data Processing Service Organizations just recognizing reality? At its annual conference held in Hawaii, Adapso abandoned its eight-year advocacy for dividing IBM into two corporations -- one for hardware, one for software/servcies. Although the lyrics have not yet been written, ADAPSO will save its "separate subsidiary" arguments for regulated industries such as communications and banking, hoping to shift the IBM focus to less abstruse concerns such as interface standards and "timely" product notification.

ADAPSO also alerted its members to the potentially adverse impact of the "Reciprocity" bill said to have strong legislative support. The bill would base foreign trade policies on quid pro quo criteria, trying to treat each nation as they treat us. Among the potential backlashings: further government involvement in trade operations; rekindled international protectionism; and the disruption of multinational operations.

• IBM LEARNS THE RULES OF THE OEM GAME -- finally. Although OEMs have professed they like the Series/1 mini, they've been vociferous in their dislike of IBM's versions of discounts. Now IBM is allowing a 10% discount on quantity one purchases to those OEMs adding value and reselling its gear. The maximum discount is 20% when combined with quantity discounts. . . . On other fronts, IBM is offering a free 15 day trial period for use of its 3279 color display and the 3101, which it is selling via direct mail and advertisements.

• HARBINGER FROM HP? HP put text and document processing software on its HP 3000 series, most likely gearing up for an attack on the office.

• SBS PUT BIRD INTO ORBIT and nabs some customers. SBS launched its first satellite a couple of weeks ago and plans to start testing on it the end of December. Meanwhile it signed on Wells Fargo and U.S. Telephone Communications, Inc., which wants to use a 13 earth-station net for voice service.

• BELL LABS -- PICTUREPHONES AND FIBER OPTICS. Scientists have discovered ways of transmitting images over twisted pair wires, which could reduce the costs of teleconferencing -- where is that Picturephone? They've also devised a potentially less expensive fabrication method for optical fibers.

• FEDS HAVE MINIMAL STANDARDS FOR BASIC AND FORTRAN. The Federal Information Processing Standards for minimal Basic and Fortran are Ansi X3.60-1978 and X3.9-1978, respectively, effective last September, but vendors have 18 months breathing space, after which processors will have to conform.

• MAGNUSON TUNES NEWEST MEMBERS. After finally tweaking to get the performance where it wanted, Magnuson announced the M80/44, pitting it against IBM's 4341-2, claiming the same power but at $297K for a basic configuration, or 75% of IBM's price. The M80/44 can have more channels, 16, and more memory, 16 Mbytes, than its IBM target. Delivery doesn't start until third quarter.

• IBM SEEMS TO WIN IN HIGHER COURTS -- Memorex's appeal to the Ninth U.S. Circuit Court of Appeals was in vain. The court said Memorex' case should get the same treatment as Calcomp's and upheld Judge Samuel Conti's verdict that IBM wasn't guilty of monopoly practices. Conti ruled because the Memorex case jury was deadlocked. Memorex plans to ask for a full appellate court hearing.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

EDP industry report

• THE INTERNATIONAL DATA CORPORATION'S NEWSLETTER FOR EXECUTIVES CONCERNED WITH THE ELECTRONIC DATA PROCESSING INDUSTRY

"THE GRAY SHEET" NOVEMBER 21, 1980 • VOL.16,NO.13 P.J. McGOVERN,PUBLISHER

IBM Purchase, Maintenance Price Cuts Blast PCMs

IBM 3081 -- MARKETING, TECHNICAL COMPROMISE? AMDAHL PROMPTLY RESPONDS WITH 580

As announced, the IBM 3081 falls neatly into the price/performance band of the repriced 3033 family, not in the range indicated by the 1980s technology of the 4300 series. Were the 3081 to offer the performance found in the 4300s it would be priced at about two-thirds its announced price or would have almost twice its announced performance. The 3081 is only the first toe of the first shoe to be dropped. -- James Peacock, IDC vice president.

Is the 3081 as announced the product that will be delivered? EDP/IR suspects that IBM will announce significant enhancements coinciding with first deliveries scheduled for fourth quarter 1981. IBM hints of future enhancements throughout the announcement -- specifically in software. But there are also a good many hooks in the machine for microcode, and the processor logic elements are easily replaceable. Thus, over time, this sytem could look very different.

Right now, the system looks like a compromise between the techies and the marketing/fiscal folks concerned with selling units during 1981. On price, the marketing/fiscal folks won. The 3081, by lying in the price/performance range of the repriced 3033 family, makes the 3033 look like a viable buy. (By reducing purchase and support fees, the 3033s are priced to sell.) There isn't a hint of a new operating system, so 370 folks should feel warm and snug.

The techies added some new angles, although less than many had expected. The packaging is new, and denser than in any previous IBM machine, although the logic chips themselves are still 16K as in the 4300s. Thermal conduction modules (TCM) are helium-encapsulated modules containing the chips. But the system is still water-cooled. Eight TCMs constitute a central processor; all are contained on a single new multilayer board that has all interconnections.

The high end PCMs may be lulled into near apathy by the lack of pricing changes; Amdahl responded in kind with the 580. But IBM is serious about its multiprocessor approach. The calculators are pounding in the mid-range PCM land which got hit with purchase price cuts, about 3% to 22%. Perhaps even harder to cope with are the maintenance cuts in both MMMC, about 8% to 11%, and 30% off some software support. EDP/IR sees the 3081 as a teaser.

EDP Industry Report is published in annual volumes of twenty-four issues each by International Data Corporation, Post Office Box 915, 214 Third Avenue, Waltham, MA 02254. Entire contents ©1980 by International Data Corporation. **Director,** James Peacock; **Editor,** Molly Upton; **Census Editors,** Paul Arabasz, Lloyd Cohen; **Contributing Editors,** Dave Dillman, John Gantz, Gerard Hallaren, Nancy Scull, Carol Weiszmann; **Circulation Manager,** Mary M. Trayte. Patrick J. McGovern, Chairman, International Data Group, John P. Breyer, President, International Data Corporation. Editorial ideas and information are researched and formulated by the editorial staff. Information and opinions in each issue are based on the best information available, but their accuracy and completeness cannot be guaranteed. **Subscriptions:** One year, $245; three years, $590. Single copies priced as indicated on inside pages. Prices for multiple copies on request. Reproduction without written permission is completely forbidden. Telex 92-3401; Telephone **617/890-3700.**

GLEANINGS OF IBM ANNOUNCEMENT

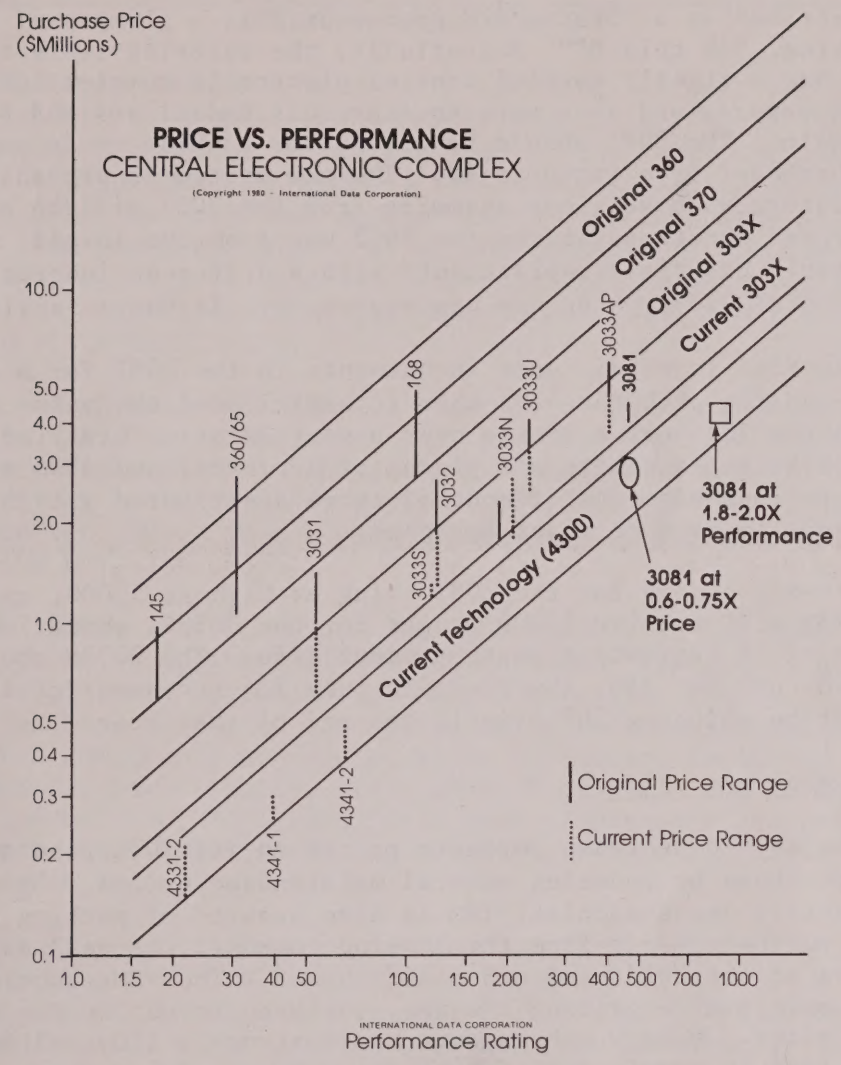
FUTURE TRENDS ESPIED FROM 3081:

- Commitment to multiprocessor types of systems. The 3081 is described as having "dyadic" processors. Easy to imagine triadic and quadratic systems.
- MVS/SP Release 3 is the pathway into the future. All are urged to climb aboard, even to skip Release 2.
- Another level of storage hierarchy.
- More offloading of intelligence throughout the system, as in the hardware/microcode enhancement to the 3033 Extension Feature that assigns intelligence to the various channels and enhances MVS/SP Release 3.
- Increased use of data streaming -- both for I/O devices and communications.
- Short-term solution to paging overhead is to dump memory onto the problem, putting the paging into one area of memory. Long-term question is whether and how IBM will enable its systems to address more than 32 Mbytes.
- The 3081's 26 nsec cycle time versus the 3033's 57 nsec cycle time would suggest that, with similar memory access and instruction fetch/execution overlap, the 3081 should be capable of nearly twice the performance of a 3033 multiprocessor, instead of bettering it by only 15% as is the case.

ANNOUNCEMENT FACTS:

- The 3081 has 2.1 times the 3033U instruction execution rate, with 16-32 Mbytes shared memory. The 3033 extension and extended addressing features are standard. The 3081 has a dyadic design with two processors operating under a single control program in a manner similar to the 3033 AP/MP. Each processor has 32 Kbyte cache. The "unique" aspect of the 3081 now is that either processor may be assigned all channel sets and channel affinity. Maximum is 24 channels, with data streaming standard on the block muxes.
- Emphasis on field-upgradability. The 3033 is now an upgradable family from the new S to the MP, all priced with blinking lights that say "buy."
- The new Model S, with 4-8 Mbytes, has twice the internal performance of the old 3031 and can be upgraded to the top 3033. It supports both MVS/SP and DOS/VSE, thus providing a growth path for many 370s and possibly 4300s. Entry level priced at under $1 million.
- The Model N gets a free performance boost of between 5% and 14%.
- The 3033 and 3042AP were expanded from 16 to 24 Mbytes, but at a price: a $35K extension feature plus extended addressing -- from $93K for a uni to $282K for AP/MP. The 8 Mbytes added memory is not from new production.
- Some wraps were taken off MVS/SP Release 3, with big memories encouraged; the 6% to 12% performance boosts seem to depend on memory size.
- MVS users report to IBM support centers.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**



IDC PERFORMANCE RATINGS -- 11/80
(Copyright 1980 -- International Data Corporation)

4331-1	11	3031	54	3033U	237*
4331-2	22	3032	124	3033AP	405
4341-1	40	3033S	120	3033MP	405
4341-2	66*	3033N	210*	3081	465

* Represents revised ratings; the 3033N includes the engineering change that will boost performance 5% to 14%.

470V/7C	120	470V/7	255	580 5880	1,085
470V/7B	160	470V/8	310		
470V/7A	205	580 5860	620		

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

3081 -- Now and When?

The 3081, described as a "System/370 processor," is a glimpse of H. Some analysts were asking, "Is this H?" Regretfully, the surprise is in the lack of surprise. It has a tightly coupled central electronic complex (CEC) with dyadic (pair) processors, and is a move to stave off Amdahl and NAS by indicating a growth path. The 3081 should be around for a while -- in one form or another -- its purchase/lease ratio is 40. The new system is probably the bridge into the future when versions stemming from the 3081 will be as different in capability and functionality as the 3033 was from the initial Mod 165. One possible scenario has field replacements with a different instruction set allowing users to dial 370-type or new processors -- a la Univac's 1100/60.

IBM will be careful to retain user investments in the 3081 for a decent amount of time -- unlike with the 370s when it annihilated the value of its 370/155 base with the 158 just a little over a year later. This time around, users will be able to replace bits and pieces of hardware, and also add microcode to activate various elements of control store distributed within the 3081 that thus far appear to have no roles assigned.

IDC sees first-day orders for the 3081 being as high as 5,000, and more firmly believes IBM will receive 5,000 orders for the 3033S, whose low purchase/lease ratio of 18 suggests a short product life. The 3033S should earn the nickname "cash cow" for IBM, thus helping buoy its revenues for 1981 -- remember, it won't be shipping 3081s until the end of that year.

Pricing Moves -- Many and Major

IBM seized the day to decrease purchase prices on its 303X line and further encouraged purchase by reducing several maintenance prices. By making the 3081 an attractive lease machine, IBM is also assured of putting cash into its coffers on a purchase basis from the leasing community as well as from sales to end users of the 3033S and other 303X boxes. The PCMs should look carefully at the maintenance pricing changes, designed to cut at the heart of ongoing business plans. Memory makers were again struck a blow, although Amdahl wasted no time in nearly duplicating the prices. Price moves come in many forms. Among them:

- Purchase prices were slashed 3% to 22% on various 303X models and related gear and up to 39% for some features and model conversions.

- Maintenance charges for most 370s and the 303X line were cut 5% to 15%. IBM cites inflation when raising maintenance charges and normal business review when lowering them.

- Local software support fees, priced on the CPU, were dropped 30% for DOS, OS support, but prices weren't dropped on MVS support. Some program products also received price cuts.

- Distributed Systems License Option (DSLO) was expanded to many software products associated with MVS, allowing big users to save on multiple program copies. This takes effect first quarter 1982.

- Memory prices were slashed 30% to $35K/Mbyte on existing 3033s and are priced at $25K/Mbyte on the 3081.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

AMDAHL'S COUNTERMOVES

Not to be outdone, Amdahl a week later unveiled its Oslo series, dubbed the 580, which has been under development in anticipation of IBM's H series. The moves keep Amdahl on the big side of the large machines in the IBM world, but also indicate Amdahl's reluctance to switch to multiprocessor architecture. As expected, Amdahl retains its reknowned air cooling techniques. The moves closely parallel the contents of the IBM announcement, including price cuts on existing processors, leading EDP/IR to wonder why users aren't exclaiming, "Wow, I could have had a V/8." In Amdahl's bag of tricks:

- 470V/7C, which has about 45% the power of a 470V/7, and can be upgraded to V/8s, as is the case with the other 470 family members. Maximum configuration is 8 Mbytes and 8 channels. A total system with 4 Mbytes and 8 channels costs $1,050,000. Shipments begin in third quarter 1981. This closely tracks the entry-level philosophy of IBM with its 3033S.

- 580 Model 5860, a uniprocessor that provides twice the power of the 470V/8 in typical commercial environments and "represents a compatible, evolutionary extension to the 470 processor family." The system can have 32 Mbytes and 34 channels, consuming about 40% less space than comparably configured 470s. A system, including console, memory, power supply, etc., with 18 channels and 16 Mbytes costs $3.8 million, including first year maintenance charges, which would cost about $120K. Playing after you, Alfonse, deliveries are scheduled to begin April 1982.

- The 580 Model 5880 dual processor complex is basically tightly coupled 5860s, with 3.4 to 3.6 times the power of a V/8. With 36 channels and 32 Mbytes, it will cost $7.5 million, including first year maintenance charges, which have not been disclosed. Initial shipment is scheduled for second quarter 1983.

- Memory prices were cut to $37,500/Mbyte on the 470s from $50K/Mbyte and is priced at $25K/Mbyte for the 580s -- in line with IBM.

- Purchase prices were reduced 17% for typical configurations, with cuts in both CPUs and memory.

- Maintenance charges were not reduced. Amdahl doesn't charge separately for local software support.

- Memory expansion plans were announced. Amdahl plans to provide memory above 32 Mbytes on the 580, and said it will offer its version of MVS/SP support for main storage up to 32 Mbytes on all V/7 and V/8 except the V/7C. But users won't learn the availability dates until Amdahl divulges them in the first quarter 1982. In addition, Amdahl has expanded memory capacity on the 470V/5 and V/6 models to 16 Mbytes. Charges for MVS/SP Release 2 support via Amdahl's version run about $250/mo per CPU. EDP/IR expects Amdahl to come up with more charges for software support.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

CENTRAL ELECTRONIC COMPLEXES (COMPLETE SYSTEMS) -- THEN AND NOW

(Copyright 1980 -- International Data Corporation)

	Purchase			MMMC			Local Soft. Support (MPSC) DOS, OS			
	Old	New	D%	Old	New	D%	Old	New	D%	MVS
470V/7C (4M)	NA	1,050,000		NA	7,650					250
470V/7C (8M)	NA	1,200,000		NA	9,550					
3033S (4M)	NA	1,190,000		NA	6,140					815
3033S (8M)	NA	1,335,000		NA	6,740					
470V/8 (4M)	2,700,000	2,325,000		11,250	11,250	0				
470V/8 (16M)	4,025,000	3,500,000		20,210	20,210	0				
3033U (4M)	2,890,000	2,445,000	15	8,000	7,200	10	NA	802		1,145
3033U (16M)	3,523,000	2,898,000	18	9,775	8,975	8				
3081 (16M)	NA	4,046,240		NA	7,050			1,085		1,550
3081 (32M)	NA	4,596,240		NA	7,700					
3033MP (16M)	6,456,000	5,446,000	16	17,694	15,963	10	1,330	931	30	1,330
3033MP (32M)	NA	6,487,900		NA	19,100					
3033AP (16M) 12 channels	4,858,500	4,183,500	14	13,804	12,1793	7	1,330	931	30	1,330
3033AP (24M) 18 channels	NA	5,332,400		NA	15,682.50					
580 5860 (16M)	NA	3,800,000		NA	9,500					250
580 5860 (32M)	NA	4,500,000		NA	10,500					
580 5880 (32M)	NA	7,500,000		NA	NA					
IBM CPU, MEMORY PRICES -- THEN AND NOW										
3031 (2M)	664,000	518,000	22	2,450	2,205	11	632	443	30	632
3031 (8M)	979,900	833,900	15	3,350	3,105	8				
3032 (2M)	1,270,000	990,000	22	5,700	5,130	11	852	597	30	852
3032 (8M)	1,618,000	1,338,000	17	6,600	6,030	8.7				
3033S (4M)	NA	990,000		NA	5,420		NA	571	NA	815
3033S (8M)	NA	1,135,000		NA	6,020					
3033N (4M)	1,155,000	1,155,000	0	6,350	5,715	11	946	663	30	946
3033N (16M)	2,183,000	2,003,000	8	8,125	7,490	8				
3033U (4M)	2,620,000	2,225,000	15	7,200	6,480	11	1,145	802	30	1,145
3033U (16M)	3,253,000	2,678,000	18	8,975	8,255	8.7				
3033A&M (4M)	2,625,500	2,230,500	15	7,215	6,495	11.8	1,330	931	30	1,330
3033A&M (16M)	3,258,500	2,683,500	18	8,990	8,270					
3081 (16M)	NA	3,720,000		NA	7,050		NA	1,085		1,550
3081 (32M)	NA	3,920,000		NA	7,700		NA			

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

All Signs Point to MVS/SP Release 3

The thrust of the software surrounding the 3081 announcement is that users should enter the world of MVS/SP Release 3 and trust to IBM to provide for them through promised future enhancements. Among the messages:

- There will be future enhancements.
- Go directly to Release 3 from Release 1, do not pass 2 unless the user needs the capability or wants to test. However, IBM recommends putting up Release 3 in stages.
- Release 3 uses more storage (a time-worn IBM solution) to reduce paging and swapping I/O operations, in theory freeing the processor for more productive work.
- To get the most out of Release 3, it seems one should have the Extension feature.
- Release 3 appears to have been designed with fast I/O devices, such as the 3380, in mind.

Promises, promises. "An enhancement to the internal structure of the JES3 writer that permits the JES3 global to utilize more effectively the processing capacity of IBM's tightly coupled processors is planned for availability in the first half of 1982 on the then most current release of MVS/SP-JES3. This enhancement will allow continued growth and flexibility for large MVS/SP-JES3 complexes. Performance information relating to this enhancement will be available in the fourth quarter of 1981."

IBM mentions the 3380 new disk, and with the 3081's aggregate data rate of 72 Mbyte, the system may have been designed with not only the 3380 in mind, but also streaming tape drives. IBM says it has "new algorithms, which encourage contiguous allocation of related page slots on movable arm DASD, capitalize on the efficient data transfer rates of current DASD to provide improved systems responsiveness. These algorithms particularly benefit the new 3380 with its faster data rate." Swap-in can be done in one step.

Want hard figures? Hard to come by. Install the Release 3 and you won't be any worse off than if you had Release 2 without the extension feature. Release 3 with the extension feature shows about 10% improvement per transaction than without the extension feature.

Expectations of throughput improvements range from about 10% to 12% on the 3033s in TSO/batch and about 6% for intensive batch and IMS/batch of MVS/ SP Rel. 3 versus Rel. 2, and further throughput gains up to 5% for large multiple system establishments and even more with the extended addressing.

But, IBM warns, there may be a price -- in the form of increased storage requirements and increased paging rates for some installations. Then again, in TSOP environments, more memory might eliminate the need for some disks.

At a preliminary glance, IBM seems to be saying: add more memory, believe in the MVS/SP Release 3 path, and we will take you to the future -- and H?

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

• SERIES/1 GROWING UP? Word has it that IBM's mini, the Series/1, may get a 1 Mbyte big brother sometime this winter. This machine may appear as the guts of a product from either from GSD or even DPD in the guise of the 7100 which would act as a controller type unit lending 3270 functionality and/or SNA to GSD's Displaywriter. In addition, the 7100 might ultimately be marketed in the niche below the 8100 in the distributed processing market. GSD may also introduce a smaller Series/1 in spring. Series/1 may have more talent than we've seen; apparently there is a Series/1 running as a backup to a 370 processor in Europe. And at Yale, a Series/1 plays 3272 controller.

•"UNIVAC LISTENS" TO SERIES 90 USERS and will provide them in December 1982 with a growth path into the 1100 series via the 1100/60 Attached Virtual Processor (AVP), which is a special purpose CPU that operates with an 1100/60. Users can execute programs written for their old VS/9 operating system concurrently with applications written for the 1100/60's OS 1100. Univac expects most users to dedicate their systems initially to VS/9, but adds that with the attached processor configuration, new applications will be put on the 1100/60.

New OS 1100 features provide system capabilities familiar to VS/9 users, including an RPG II compiler, transaction and interactive processing systems, a text editor, and a debugging system. There's also a conversion assistance process to move programs to the 1100. Purchase prices range from $440,684 for 512K system to $701,598 for a 1 Mbyte system. Shipments begin December 1982.

• MAINFRAMERS PROLIFERATE PRODUCT FAMILIES -- Univac, Burroughs, and Honeywell have all expanded their lines recently. Univac adopted distributed microprocessor architecture for its 1100/61 E1 and E2, which with 8K bytes cache are 45% and 40% more powerful than the respective C1 and C2 models. The new systems are field upgradable to Models H1 and H2. Costs with 2 Mbytes are $518,975 and $555,545; deliveries are scheduled for first quarter 1981.

Burroughs sets its sights on other vendors with the B 5930 "function processor," which sits at the entry level of its large scale systems. Its performance is about half that of the B 6900 and prices start at $200K, in line with the 6900's price/performance ratio. With software compatibility with larger Burroughs systems, the firm expects the system to be attractive to users facing costly upgrade conversions. A multi-level Function Processor architecture extends the concept used in other B 900s and has computers within computers tending to different types of tasks. Burroughs plans to extend its 900 family with the 4900 and the 7900 series. Currently the 3950, aimed at IBM's 4341, is on ice indefinitely because of difficulties with the program module. Seems Burroughs can't get the performance up to specifications.

Honeywell has unveiled two DPS 8s, the 8/62 and the 8/44D. The 8/62 uniprocessor is about 30% more powerful than the DPS 8/52, while the 8/44D dual processor has about 76% more power than a single DPS 8/44. Shipments start in third and first quarter of 1981, respectively. Prices of 1 Mbyte systems are $759,135 and $424,000.

• IBM OPENS RETAIL STORES. ARE DESKTOPS next? IBM's Office Products Division is opening retail stores with gear ranging from typewriters through GSD's desktop system, the 5120. Suspicion: IBM will add a $2K - $4K desktop.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

EDP industry report

• THE INTERNATIONAL DATA CORPORATION'S NEWSLETTER FOR EXECUTIVES CONCERNED WITH THE ELECTRONIC DATA PROCESSING INDUSTRY

"THE GRAY SHEET" OCTOBER 30, 1980 • VOL.16.,NO.12 P.J.McGOVERN,PUBLISHER

Tower of Babel Challenges Office Automation -- Page 3

HONEYWELL COMMUNICATIONS SCHEME INCLUDES TALKING WITH OTHER VENDORS

"In the long term we have to assume that all computers, whether they're used by banks, governments, larger business corporations, or small businesses, are going to have to cooperate with everybody else's computer on behalf of their owners. If that's so, the rigidly hierarchical approach of master/slave computer relationships is fundamentally wrong."
-- Charles Bachman, senior Honeywell consultant who chairs the ISO subcommittee on open systems.

Thus Honeywell announced to the world that it is preparing the second phase -- called Distributed Systems Architecture (DSA) -- of its plan for peer-to-peer networks, as outlined back in January 1977 (EDP/IR, Jan. 31), when it unveiled its development strategy known as Distributed Systems Environment (DSE). A look at the various pieces of the plan as recently ennunciated:

- Phase One: user-visible interfaces across HIS products, e.g., Cobol, I-D-S/II data management system, transaction processing.
- Phase Two: definition of communication management and message management functions and protocols, implementation of four layers of communications management, some functions in the application layer, and a set of distributed system applications.
- Phase Three: system-supplied coordination and control, load leveling and resource-sharing across computers, i.e., a peer network.
- Phase Four: partitioning across processors of a logical data base.

Now, the development strategy is evolving into products. As the mortise to hold these various chinks together, Honeywell has adopted the International Standards System (ISO) "open system architecture." DSA supports packet and circuit switching in the form of X.25 and X.21, and uses High-Level Data Link Control (HDLC). Through the use of satellite processors and terminal controllers, the network can accommodate other protocols, such as TTY and bisynch, thus giving HIS a window into the IBM world, among others.

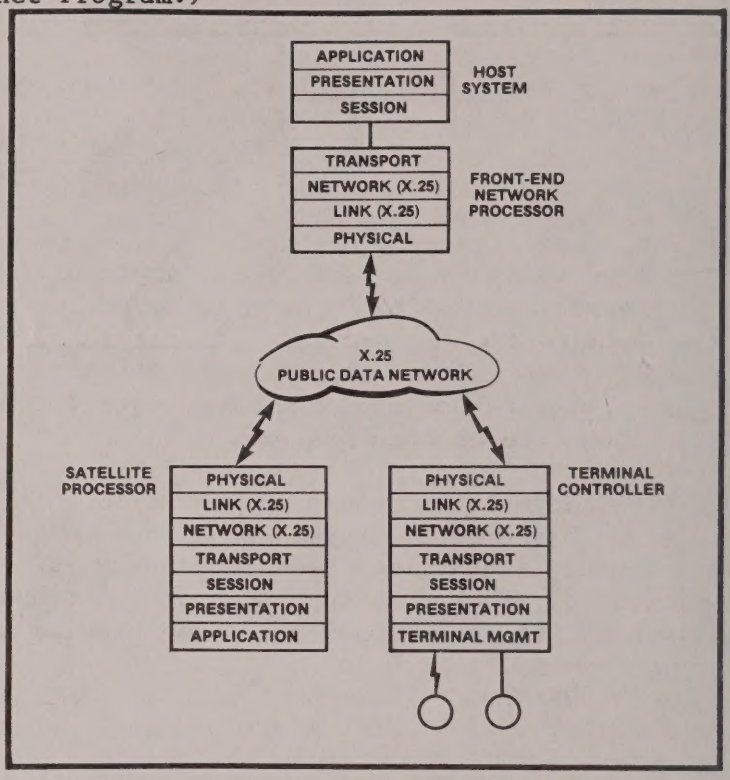
EDP Industry Report is published in annual volumes of twenty-four issues each by International Data Corporation, Post Office Box 915, 214 Third Avenue, Waltham, MA 02254. Entire contents ©1980 by International Data Corporation. **Director,** James Peacock; **Editor,** Molly Upton; **Census Editors,** Paul Arabasz, Lloyd Cohen; **Contributing Editors,** Dave Dillman, John Gantz, Gerard Hallaren, Nancy Scull, Carol Weiszmann; **Circulation Manager,** Mary M. Trayte. Patrick J. McGovern, Chairman, International Data Group, John P. Breyer, President, International Data Corporation. Editorial ideas and information are researched and formulated by the editorial staff. Information and opinions in each issue are based on the best information available, but their accuracy and completeness cannot be guaranteed. **Subscriptions:** One year, $245; three years, $590. Single copies priced as indicated on inside pages. Prices for multiple copies on request. Reproduction without written permission is completely forbidden. Telex 92-3401; Telephone **617/890-3700.**

Honeywell is also talking about eventually facilitating connection with SNA devices. If so, then it really may be sincere about communicating with others. Seems to EDP/IR that the fate of many companies hinges on whether their systems at least will be able to communicate with others and swap files and data, if they're not applications compatible. (Digital Equipment Corp., for instance, said in February that it would develop X.25 support and SNA emulation, and has since put X.25 capabilities for PDP-11s, VAX 11/780 and Decsystem 10s and 20s in its Packetnet Program.)

The DSA uses High Level Data Link Control (HDLC) as defined by ISO, as its standard protocol. The HDLC has various layers including communications management, message management, and application.

Bachman states: "The fundamental concept behind DSA is that the customer application should not be distorted by the computer configuration. Technology can, and should, adapt the computer system to fit the business of an organization."

In its second phase, there are hardware as well as software pieces announced, some of which are upgrades of 1977 gear, some of which are extensions of previous capabilities.



The hardware includes a Datanet 8 (DN8) (replacing the Datanet 6678) network processor based on Level 6 technology, which operates in a net that uses DPS 8 or Level 64/DPS hosts with Gcos 8 and Gcos 64 operating systems, respectively. With a high-speed processor option the DN8 can execute up to 1 million instruction/sec (Mip). Its bus can handle transfers at the rate of 6 Mbyte/sec. The DN8 can handle up to 16 channel interface bases with terminals operating at up to 56 kbit/sec. A DN8 with 16 lines costs $45K.

The software includes the Distributed Network Supervisor (DNS) which provides interfaces to various elements of a network and also supports X.25 and X.21. DNS supports the four communications management layers in the DSA as well as the terminal management function in a secondary network attached to the front-end network processor. The DNS costs about $600.

The hardware/software blend lies in the Distributed System Satellite (DSS) that allows a Level 6 to function as a satellite processor and to communicate with a host in a DSA network via one leased line at a time. Honeywell says it can also control a local net.

The DSS uses the Gcos 6 Mod 400/DSS operating system, which enables a satellite site to run a couple of network application programs such as file transfer or remote batch simultaneously with local processing programs. But capabilities aren't free. Initial license fees run about $9K.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

TOWER OF BABEL

Sometimes bad habits are hard to break. One would hope that the office, only recently entering into the days of automata, could avoid some of DP realm's frustrations stemming from incompatibility or the Tower of Babel.

But no such luck. For indeed, the office arena appears to have the potential to become vastly more complex than DP. There are the usual factors such as geographic dispersion and communication between various points. Add the multiple media that are only natural to be linked together, such as fax, high speed copier/printers, graphics, text, data. To this witches' brew add the absence of industry standards for control codes of word processing functions.

It's no secret that the office is the recently discovered Cinderella who is leaving behind its reputation as one of the undercapitalized people-intensive areas and is being wooed by vendors of assorted baubles.

There are various approaches to attacking the periphery of the perceived low productivity in offices -- gear is being oriented to the manager (Prime Computer's thrust), the secretary (IBM and Qyx battle it out with increasingly capable typewriters), and the knowledge worker (probably Convergent Technologies and Apollo Computer).

But the central thrust of the future office is the ability to communicate with all the pieces of the enterprise in an easy to operate manner.

One piece of gear that has evolved into a sophisticated, multiple purpose element in the puzzle is the intelligent copier/printer. These follow the trends of much of the DP industry, starting with huge monoliths, then evolving into lower price, potentially more capable devices as time and technology march on.

IBM and Wang were first on the scene, but Wang had to bite its tongue and remove the copier function because it didn't work. Now comes Xerox, which would seem a relative natural in this area, with the 5700, a medium-speed intelligent copier/printer. Eventually, IDC sees the price level coming down to the point where such a device could easily and feasibly replace several daisywheel type printers at a site.

At both the relative high and low ends, Xerox and IBM recently have traded some pretty hefty blows, dispelling the myth that the Xerox-IBM bout in copiers was a passing fad.

- Xerox leveled its 5700 Electronic Printing System at IBM's 6700.

- IBM signed an OEM pact with Minolta for low cost copiers (IBM didn't have any of its own) including the 310 and 520, which retail for around $4,000 and $6,000). The pact's value is estimated at between $500 million and $1 billion.

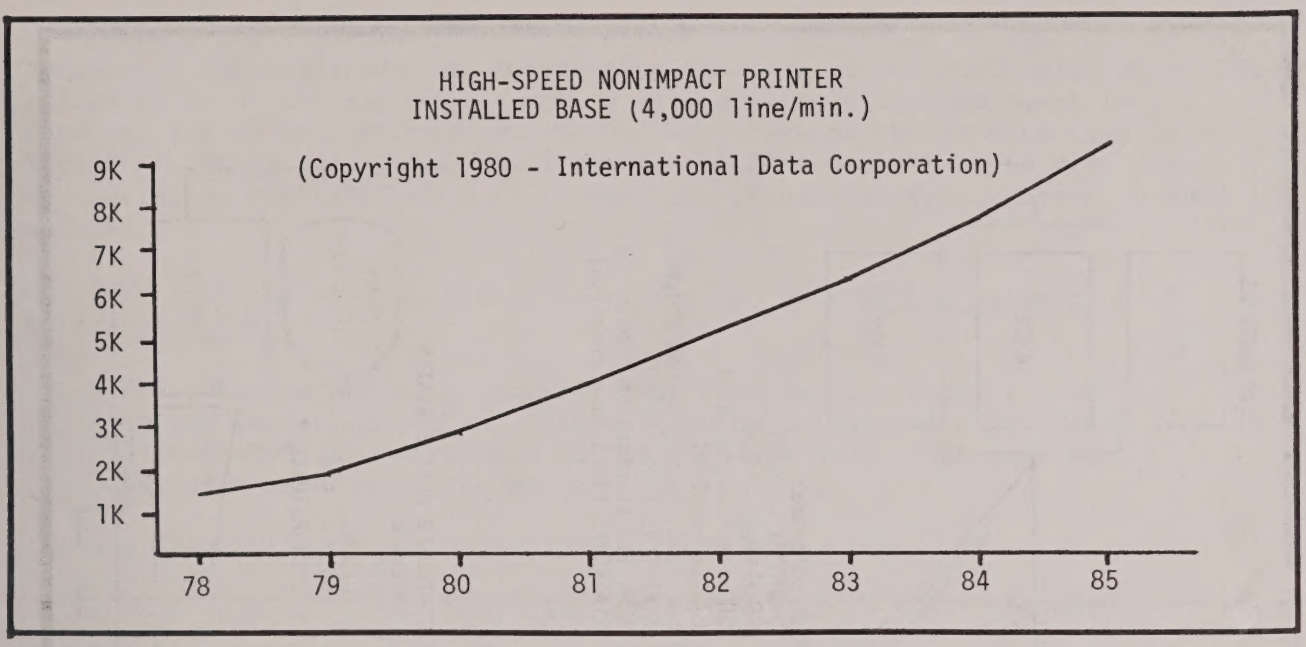
The Xerox 5700 Electronic Printing System bears the same laser printing technology as its 9700 high-speed printer and 5600 copier. Recognizing that the world is comprised of IBM text systems as well as the Xerox 850 and 860, the 5700 also accepts input from IBM's OS/6 and communicating mag card typewriters -- a stride toward diminishing the Tower of Babel.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

INTELLIGENT PRINTER COMPARISON CHART

	XEROX 5700	IBM 6670	WANG IMAGE PRINTER
Technology	Laser, xerographic	laser, xerographic	fiber optic, xerographic
Off/on line	on/off	on/off	on
Copy option	yes (L.A. only to start)	yes	no
Duplex	yes	yes	no
Forms generation	yes	no	no
Input method	2 trays (1,000 sheets)	2 trays (2,700 sheets)	2 trays (600 sheets)
Paper dimensions	8 1/2"x11"; 11"x14"	8 1/2"x11"; 11"x14"	8 1/2"x11"; 8 1/2"x14"
Paper weight	16-32 lbs.	16-32 lbs.	16-32 lbs.
Speed	43 ppm	36 ppm	18 ppm
Fonts	200 (50 concurrently)	6	3
Fonts per page	4	4	2
Fonts per job	16	4	2
Print resolution	300 X 300	240 X 240	300 X 300
Compatible with	Xerox word processors 6670, 5700, IBM OS/6, 360/370	OS/6, mag card devices, 360/370 & 6670 (2770), 8100, 5520 (Nov. 1980)	Wang OIS and VS Series, Wang 2200
Communications	up to 9600 baud, RS-232	up to 4800 baud (7200 in SNA), RS-232	none
Storage capacity	1,000 pages	100 pages	--
Costs			
Purchase	$57,300-$91,050	$75,000	$32,000
Maint. (monthly)	$620 (includes 20,000 pages)	$355	$400
1-yr. lease	$1,240 (includes first 10,000 pages)	$1,375	$1,375
User charges	$0.025 per page (10,000-40,000 pages)	$0.025 per page (more than 5,000 pages)	$0.015 per page (over 30,000 pages)
	$0.0190 per page (over 40,000 pages)		
Delivery	Dec. 1980 (see p.9 for options dates)	April 1979	March 1980
Misc. features	unattended operation		

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**



The 5700 undoubtedly will find its ultimate home as part of an electronic mail complex, rather than simply an output device. Messages can be sent at 9,600 bit/sec or about three second/page between 5700s to specific "mail box" numbers to be either printed immediately or stored for printing later. (Right now, the messages cannot be retrieved on CRTs, thus no changing of text or appending of notes.) For communications, the 5700 is also compatible with gear that uses IBM 2770 terminals, including IBM's 6670, and 360/370s. The 5700 can store up to 1,000 pages for later printing or transmission, and can awaken at night to send when the phone rates are cheaper.

As a copier, the 5700 has the same capabilities as the 5600 copier/duplicator, icluding automatic handling of double-sided originals, duplex copying, and handling 43 page/min or 2,800 line/min.

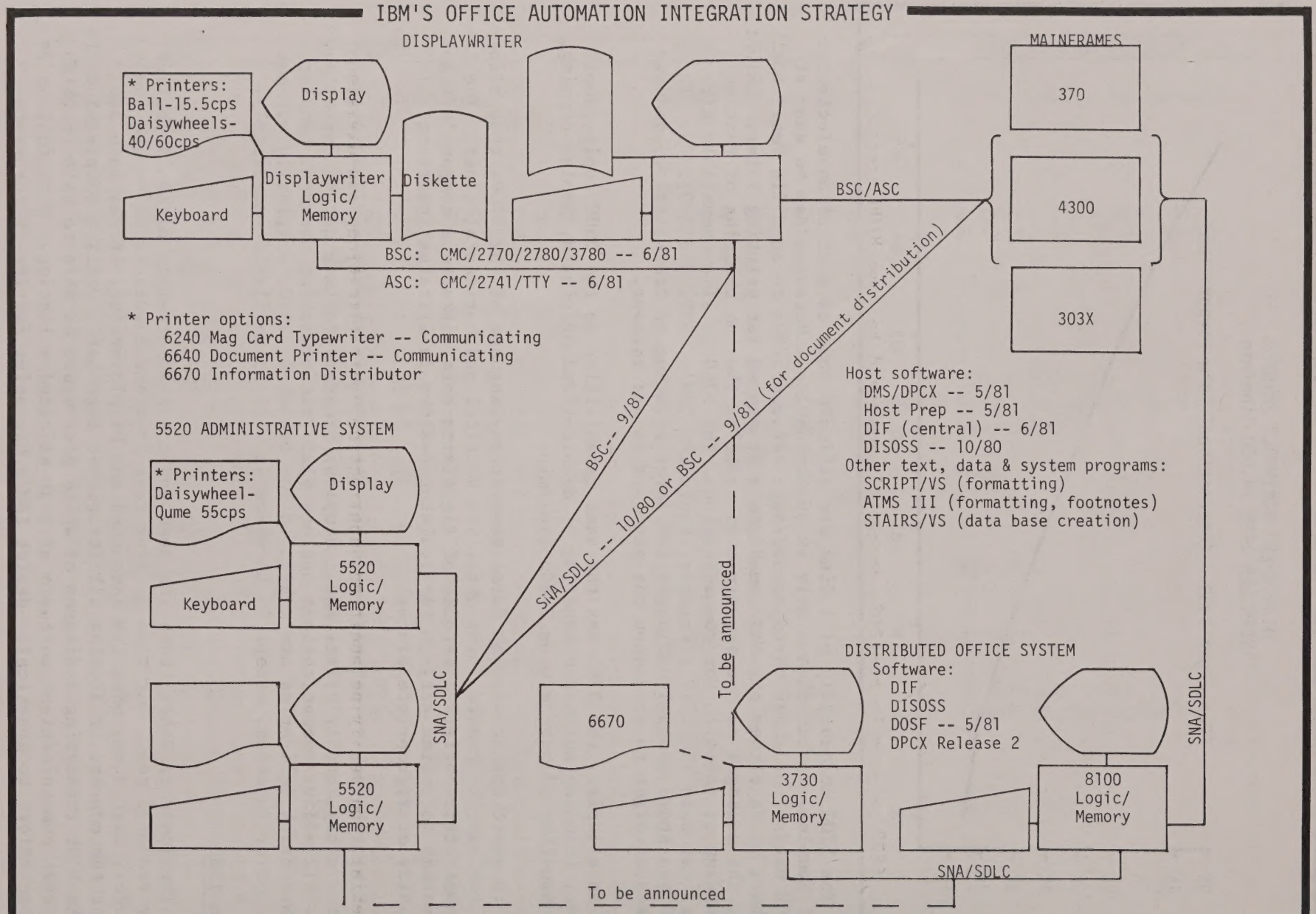
In addition, it has the forms generation language of the 9700, thus allowing the user to create forms etc., via vertical and horizontal lines. The Los Angeles office offers a service of digitizing onto diskette a company's logos, etc. that defy line art. A recirculator feature facilitates inserting graphics at appropriate places.

Like all good DP-related products, the 5700 has lots of options, which of course carry monthly price tags. Samples: readers for mag cards, cassettes, etc. $125-$150; communications options $125; recirculating document handler, $150. First deliveries are scheduled for December, 1980, originally without the copier function, except in LA where it will be available immediately.

Even IBM

The Tower of Babel rears its head and roars at attempts not only to link many vendors' gear, but also to link gear from one manufacturer -- IBM isn't immune. Last June, when IBM announced the Displaywriter, it was much ado about the concept of linking all its pieces together. Well, a couple of calls to Ma Blue requesting a diagram of which gear would be able to talk to which via what communications software at last elicited a listing. What follows is a best effort to graphically depict IBM's blueprint for its office gear.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**



Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

Despite the vagaries of the IBM scheme, the multitude of implementation dates, and the difficulty of deciphering what will communicate with what, IBM stands alone as the mainframer making this magnitude of commitment to tie together its DP and WP domains. To be sure, part of the problem lies in the fact that IBM is taking on the burden of the office while it is midstream in attempting to persuade its base to make the transition from bisynch to SDLC and SNA.

Here are some missing links, as espied by IDC's Office Automation Reporting Service:

- SNA/SDLC for the Displaywriter, but this in itself may not be enough for it to exchange documents with the Distributed Office System (DOS) software used on the 8100 and 3730. IBM indicates SNA/SDLC here is in the works.

- A direct link between the 5520 and the DOS.

- 6670 support by the DOS, apparently promised to some 8100 users.

- Compatibility of text processing functions throughout IBM's text processing line. Now with the grouping together of Office Products Division and General Systems Division, respective parents of Displaywriter and the 5520, perhaps this may happen.

IBM lets out leash on Displaywriter

It's been four months since IBM sales personnel were somewhat overwhelmed with orders for the Displaywriter, introduced with asynch and bisynch communications and standalone text processing functions with capability to share a daisywheel printer.

Now come the first round of enhancements, including a double sided, double density diskette drive, which stores about 1 Mbyte, and costs $1,700 or $3,300 for the dual diskette unit. Deliveries begin in June 1981.

With this additional storage, IBM announced Languagepack, $15/mo -- dictionaries to check spelling in six languages. Previously the system handled English only. The Textpack 3, $25/mo, includes math and statistical facilities such as putting numbers in columns, rearranging previously stored statistical material, and verifying addition, subtraction, multiplication, and division. Also included are text features such as global replace, and automatic merge of standard and variable information. Textpak 3 also runs on IBM's single density diskettes.

A typical Displaywriter with the above enhancements sells for $11,490 and leases for $364/mo plus $40/mo with both of the new software packages.

Others plan to Unchain Displaywriter

The guts of the Displaywriter include Intel's 8086 16-bit microcomputer, and this underutilized intelligence has not gone unnoticed by entrepreneurs of various ilk. EDP/IR expects to see intelligent, multiple purpose workstations offered by others that are built around the Displaywriter. For instance, Softech Microsystems is planning to construct an interpreter for the 8086.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

• BETTING ON IBM in the U.S. vs. IBM antitrust case looks like an increasingly sure move; although the FTC decisions aren't binding on brother Antitrust Department, they may well have influence. In a case involving DuPont, the FTC ruled that "actions that could create a monopoly aren't illegal if they result from aggressive competition based on technological advantage," as reported in the Wall Street Journal. That would seem to sum up IBM's case in a nutshell. However, the DuPont case hadn't gone through 11 years of existence on the books and in trial; the FTC ruling upheld a decision by an FTC administrative law judge. The IBM case drones on, with the battle being fought now on paper. IBM's economists are submitting written testimony and there has been no sustained courtroom activity since early summer. Judge David N. Edelstein has muttered there might be a light at the end of the tunnel. Settlement talks were held earlier this year between the two parties.

• SMALL IS BEAUTIFUL ... AND PROLIFIC. The small computer systems are multiplying rapidly -- especially from Digital Equipment and Data General. DEC introduced the Datasystem 315, based on the 11/23, designed as an entry-level member of the 300 family. The system can be used as a small business system, network node, or store-and-forward terminal. Prices for the 64K version, including LA120 printer, 1 Mbyte floppy, VT100, and CTS-300 operating system, start at $17,600. DEC also added five microcomputer component configurations based on the LSI 11/23 and LSI-11/2, and cut prices for others from 6% to 21%.

And DG has been busy. It has launched an entry-level member to its Synergist packaged business system line, which is sold through its General Distribution Division. The M1000, which comes in three models, stem from the Digital Computer Controls product. Prices range from $10,950 to $25K. DG has added applications software for the wholesale distribution market. Then there's the intelligent workstation, known as the MPT family of Micronova based systems, which offer a 16-bit micro, 60K memory, and up to 716K minifloppy along with keyboard/display for $7,100. Prices start at $4,800 without floppy. The MPTs are software compatible with other DG systems and run MP/OS and accept Pascal, Fortran, or Assembly written on hosts and then transferred to the smaller machines.

• JESSE REALIZES DREAM of Storage Technology Corp. (STC) becoming the one-stop shopping provider of IBM-compatible peripherals, communications gear, and CPUs. STC nearly went to the altar with Amdahl, but the terms didn't set right with STC chairman Jesse Aweida. He apparently has decided STC's Microtechnology Corp. has the basics with which to enter the CPU business. To protect shareholders, the venture is being financed separately, and then STC may decide to buy it back on a deferred basis. In the meantime, the folks at STC who deal in OEM gear have established a peripherals subsidiary which means this effort will become increasingly independent of the folks that sell direct to the end users.

• DISK MAKERS RETALIATE vs IBM's new disks. STC announced products, while Memorex announced intentions of a product. STC's answers to the 3380 will cost $79K to $139K while its version of the 3370 will go for between $25K and $46K. Delivery dates are second quarter 1982 and fourth quarter 1981, respectively. STC also will add streaming channel support to its solid state disk, the STC 4305. Memorex said work is under way on dense media.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

EDP industry report

• THE INTERNATIONAL DATA CORPORATION'S NEWSLETTER FOR EXECUTIVES CONCERNED WITH THE ELECTRONIC DATA PROCESSING INDUSTRY

"THE GRAY SHEET" OCTOBER 24, 1980 • VOL.16,NO.11 P.J. McGOVERN,PUBLISHER

IBM, PCMs Add to Lines

SYSTEMS SOFTWARE LOOMS AS PCM - IBM BATTLEGROUND; AMDAHL ATTACKS IBM INSTALLED BASE SOFTWARE REVENUES

Makers of IBM plug-compatible machines (PCMs) should start taking some tips from Amdahl Corp., which has established itself as the grandad of the group. Amdahl for some time has offered its own versions of such program products as SEA that perform the same functions as available on IBM CPUs. With IBM's strategy of improving its systems performance through a complex triad of hardware, microcode, and software, the PCMs may find themselves left in the dust of vintage 1979 IBM systems software if they don't start offering their own versions of IBM products such as Systems Products.

EDP/IR thinks PCMs are wishfully naive if they contend potential problems of IBM compatibility can be countered by their ability to change their own microcode to keep up with IBM. For no longer is the secret simply hardware, simply software, or simply microcode. Rather, IBM increasingly is weaving the three together, and that takes some doing to duplicate.

Unnoticed by some is the fact that Amdahl systems can run a version of Unix operating system on their machines in the user's VM/370 environment. Thus, should IBM make future or partial versions of operating systems inappropriate or unavailable for Amdahl systems, the Amdahl base using Unix can go its own way with Unix. Unix was developed by Western Electric and has received kudos for its simplicity of design. Amdahl users can obtain licenses from Western Electric. (Not coincidentally, one of Amdahl's biggest customers is none other than Ma Bell's family -- so the Unix move may satisfy not only Bell's wishes but the best interests of Amdahl also.)

However, Amdahl may be becoming a bit too ambitious in its software plans from IBM's viewpoint. For not only is Amdahl offering selected programs to duplicate IBM functionality on its machines, but it is also offering less expensive, reportedly better performance, pieces of systems programs to the IBM installed base -- a huge market opportunity. Because IBM has only recently paid attention as to how to milk this base for systems software revenues, it is unlikely that this Amdahl approach will go unnoticed. The name of the game, despite higher outright sales and resulting earnings in IBM's third quarter than either the year ago period or the previous quarter, is still recurring revenues, and that, we all know, can best be obtained from software.

EDP Industry Report is published in annual volumes of twenty-four issues each by International Data Corporation, Post Office Box 915, 214 Third Avenue, Waltham, MA 02254. Entire contents ©1980 by International Data Corporation. **Director,** James Peacock; **Editor,** Molly Upton; **Census Editors,** Paul Arabasz, Lloyd Cohen; **Contributing Editors,** Dave Dillman, John Gantz, David Moschella, David Terrie, Nancy Scull; **Circulation Manager,** Mary M. Trayte. Patrick J. McGovern, Chairman, International Data Group. John P. Breyer, President, International Data Corporation. Editorial ideas and information are researched and formulated by the editorial staff. Information and opinions in each issue are based on the best information available, but their accuracy and completeness cannot be guaranteed. **Subscriptions:** One year, $245; three years, $590. Single copies priced as indicated on inside pages. Prices for multiple copies on request. Reproduction without written permission is completely forbidden. Telex 92-3401; Telephone **617/890-3700.**

Basically, IBM has evolved its software pricing strategy in an attempt to satisfy divergent demands by its own planners. Charging for the SP portion and giving away some of the operating system are the solutions to getting more revenues from software while having some control over what systems the software can be used on.

Although some PCMs have indicated they have no difficulty in modifying their microcode to emulate the functionality of IBM's changes in microcode, IBM is picking up the pace of these changes. One PCM indicated it has reacted to IBM moves seven times.

If the PCMs pause between microcode fixes to assess the combination of reduced hardware prices and the increasing likelihood that the hooks between the IBM microcode and the SP portions will become even more complex, they may conclude that they too should be in the systems software business.

Witness Amdahl

Amdahl has a number of offerings that are functionally equivalent or superior to various portions of IBM software packages. These include:

- VM/PE, said to reduce overhead for MVS or SVS when running concurrently with VM/370.

- MVS/SE Assist Release 2.1, which runs on both "Amdahl and Amdahl-compatible processors" i.e., IBM and the rest of the PCM world. Throughput capacity can be improved by up to 12%, according to Amdahl. It can run on 370s without the Extended Facility. MVS/SEA costs $250/mo for Amdahl and non-Amdahl CPUs.

Other offerings -- including hardware and software -- recently unveiled by Amdahl include:

- An accelerator package for 470V/7B that gives it the power of a 470V/7 -- or 1.5 times the normal performance of a 7B. The customer pays an installation fee of $2,500 in the field and then $300/hour for the time during which the accelerator is used.

- Additional support of the Airlines Control Program (ACP), which IBM licenses to Amdahl; recovery management system; ACP/system error dump analysis; VM/software assist; and some classes in use of ACP.

- Tackling IBM's MP approach via Multiple System Communication and Control (MSCC) that allows loose coupling and Software (Extended Channel Support) support for MVS and VM for 32 channels via MVS and VM. MSCC costs $250/mo for each processor. MVS/ECS costs $500/mo and VM/ECS $1,000/mo per processor. The VM/ECS requires installation of IBM's VM/SP and will coexist with but does not require Amdahl's VM/PE program product.

Amdahl's Unix

Amdahl's Universal Time-Sharing System (UTS) is a modified form of Unix Version 7.0 and adds support of full-screen sessions on IBM 3270-compatible

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

IBM 4300 OPERATING SYSTEMS

CPU Model	Operating System	Microcode Assist	Hardware Assist	Disk Support
4331-1	DOS/VSE	Yes (P)		FBA +/or CKD (3340)
	OS/VS1	No		CKD
	VM/SP	No		FBA +/or CKD
4331-2	DOS/VSE	Yes (P)		FBA +/or CKD
	OS/VS1	No		CKD
	VM/SP	No		FBA +/or CKD
4341-1	DOS/VSE	Yes (P)		FBA, CKD, 3380
	OS/VS1	Yes (P)		CKD
	VM/SP	Yes (P)		FBA +/or CKD
	MVS/SP	Yes (P + F)	#	3380, CKD
4341-2	DOS/VSE	Yes (P)		FBA +/or CKD
	OS/VS1	Yes (P)		CKD
	VM/SP	Yes (P)		FBA, CKD, 3380
	MVS/SP	Yes (P + F)	#	CKD, 3380
	ACP/TPF			CKD, 3380

FBA = Fixed Block Architecture, or the 3310 and 3350; CKD = Count Key Data, or all other disks. 3380 identified where usable. # = ECPS expansion feature needed in order to run MVS/SP under VM/370. P = performance enhancement, F = features added with microcode.

terminals. It operates as a virtual machine in the user's VM/370 environment. Amdahl users pay Amdahl $3,000 per processor after obtaining a license from Western Electric for Bell Labs' Unix Timesharing Operating System Version 7.0. Western Electric charges $28,000 for the first machine source code license and $9,400 for subsequent licenses.

Apparently, there's an active rumor mill in operation, the latest being that a large airline replaced its Amdahls with IBM when IBM indicated it could no longer run ACP on some other system. However, this is utterly fallacious, all the more so when one considers that IBM has licensed ACP to Amdahl. In actuality, the airline elected to add a 3033 rather than a V/8 but has not displaced any machines and has ACP running on both Amdahl and IBM gear. But the intent of the garbled message is clear: strike fear into the hearts of PCM users; make the users consider the value of IBM software.

National Advanced Systems (NAS) is recognizing the importance of software for its systems, and plans to expand its efforts here. NAS thinks there's an opportunity in the area of program products, but an even greater market for productivity aids. NAS said it supports the widest range of IBM operating systems in the industry on its Itel base of systems. The company recently announced a raft of plans to produce 4300, DOS-type compatibility on its systems in the typical effort not to be outpaced by IBM.

There's more than one way to enter the PCM business, according to Heinz Nixdorf, who went out and bought The Computer Software Company, source of the Edos operating system which at yearend 1979 was installed on about 1% or 93

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

sites of the U.S. 370 base. Thus, not only does Nixdorf have its own version of an operating system for its hardware, but it also has an installed base.

Nixdorf apparently plans to bring from Europe the 8890, which was developed by Elbit Computers, Ltd., based in Israel. The 8890 is said to have a maximum memory of 4 Mbytes and to be in the range of the 4341-2.

4341-2

And IBM finally let the other shoe drop in the form of the 4341-2, accompanied by enhanced block multiplexer channels for both the 4341-1 and -2 so they can support the 3380 disk. Part of the announcement is the fact that one needs certain microcode in order to run the 3380 disks under some operating systems, thus making life a bit more complex for the PCMs.

The -2s in the 4300 line may suffer somewhat from the lack of surprise with which they were greeted as analysts predicted their introductions prior to the birth of the series.

Actually, EDP/IR believes that although the 4341-2 is related closely in name to its smaller brothers, it should be perceived as the first of many beachheads established in the larger systems territory of IBM rather than as an extension of the 4300 family. One indication is that IBM endowed the 4341-2 with the airlines control program ACP/TF, the first of the 4300s considered big enough to merit this software and type of application.

The major feature of the 4341-2 is its ability to run both VM/370 and MVS/SP concurrently and an Extended Control Program Support (ECPS) expansion

MVS AND IBM SCENARIOS

The 4341-2 serves to clearly illustrate the importance IBM is placing on MVS as a means of migrating users into the long-rumored H series. In addition, there is a gaping hole between the top-of-the-line 4341-2, which is priced about $385K and the 3032 that costs about $1.6 million. The 4341-2 has virtually obsoleted the 3031. Current prognosis is that H may be announced by the end of this year; no later than first quarter 1981. There are several scenarios -- IDC likes the first:

- H will be introduced with Mips between 10 and 20. Thus the 3033 series won't be impacted by this machine. To fill in the gap, there will be a 3033E, water cooled, with Mips between 2.5 and 2.8 or IDC power rating of about 120, that's field upgradable all the way to the 3033 MP/AP versions which have a rating of 380.

- Along with the big H there will be a 4351 to fill in the gap, being essentially the same power as the 3033E. This will be air cooled and run both VSE and MVS.

- IBM could blast all barrels, with a big H, the 4351, which offers DOS/VSE users growth, and the 3033E.

- IBM could announce two versions of H, one about 9.5 to 10 Mips and a smaller one around 3 Mips, thus impacting the 303X line.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

feature ($25,000) to boost throughput. Like all "bigger and better" machines, the 4341-2 has more power -- a performance ratio 1.5 to 1.8 above the 4341 and a 120- to 240 nsec processor cycle time in contrast with a 150- to 300 nsec for the 4341.

For instance, in releasing performance statistics, IBM confirmed what most of the world knew: not to run MVS under VM/370 on a 4300 unless one has the ECPS expansion feature. IBM's relative batch throughput (RBT) measurements on a 4 Mbyte 4341-2 running MVS/SP-JES 2 in a V = R virtual machine under VM/SP:

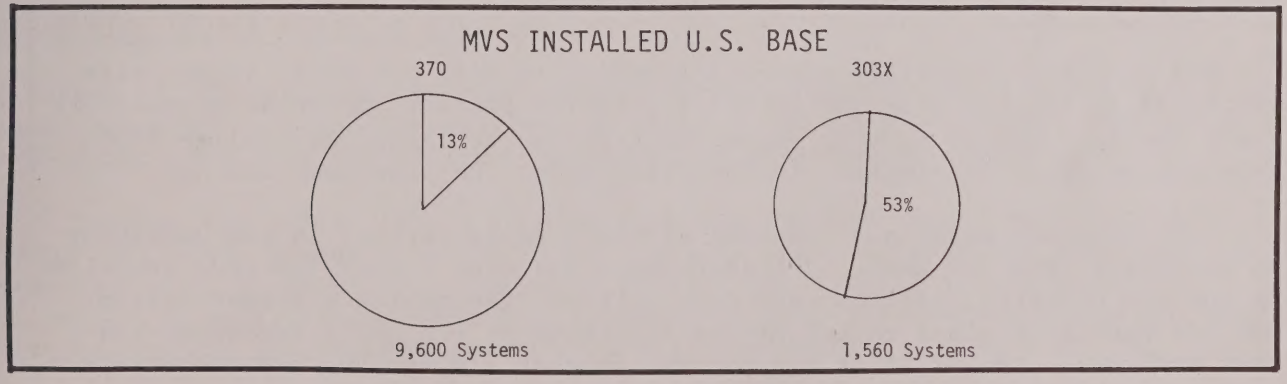
	without ECPS:VM/370	with ECPS:VM/370
Commercial	.20	.80
Scientific	.53	.95

Basically the system is four times as effective in the commercial mode with all the IBM bells and whistles.

There's more of everything, in this case twice as much as the 4341 in terms of: maximum main memory (8 Mbytes), twice the cache (16K), and twice as many channels (6). The standard model includes one byte multiplexer channel and five block multiplexers with a block transfer rate of 3 Mbyte/sec for channels 1 and 2 and 2 Mbyte/sec for channels 3, 4, and 5. One of the block muxes can be optionally selected as an additional byte mux channel.

Pricing seems to be slightly more aggressive, but generally in line with what IBM established when it introduced the 4331-2; the price is increased in direct proportion to the designated increase in power. The 4331-2 was twice the performance at twice the price; the 4341-2 is 1.5 to 1.8 times the performance at a little less than 1.5 times the price. Prices of the 4341-2 start at $385,000 for a 2 Mbyte system and range to $479,200 for an 8 Mbyte system. Deliveries start in second quarter, 1981, as do field conversions. The charge for converting from a 4M byte 4341 to a similar 4341-2, is $127,750. If the base system has been upgraded with the new maximum number of six channels, the charge is $110,800.

When IBM announced last June that it would make MVS available on the 4341 thus allowing use of the super large, fast 3380 disk, one user commented that the lure of the big disk to convert to MVS was "not a carrot but a club." Users want the 3380 not only because of its price/performance ratio, but also because it consumes far less floor space. However, demand is so great that delivery time is about 10 months, EDP/IR hears.



Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

IDC RELATIVE PERFORMANCE (RP) RATINGS OF IBM SYSTEMS

Model	RP	Model	RP	Model	RP	Model	RP
370/138	11.7	4331	11				
370/145	18	4331-2	22	370/158	41		
148	24	4341	37	158-3	45		
155	31	4341-2	59	158MP	60	3031	54
				165	89	3031AP	90
				168	109	3032	124

DISKS USABLE ON 4341S

	333X	3340	3344	3350	3375	3380	3370
MVS/SP	x	x	x	x	x	x	
VS1	x	x	x	x	x		
DOS/VSE	x	x	x	x	x		x
VM/SP	x	x	x	x	x	x	x
ACP/TPF	x	x		x		x	

OPERATING SYSTEMS ON 4300S

	4331	4331-2	4341	4341-2
MVS/SP			x	x
VS1	x	x	x	x
DOS/VSE	x	x	x	x
VM/SP	x	x	x	x
ACP/TPF				x

PCMs fill out lines

And the plug-compatible makers are racing to fill out their lines, with IPL building for the high end of the line while National Advanced Systems isn't overly adept at denying rumors that it has at least one smaller 4300-type system under development in San Diego under the code name Shark.

IPL, long the maker and licenser of CDC's Omega series, is now embarking on selling to the end user. IPL said there are over 150 of its CPUs installed by CDC and Olivetti, its European OEM. IPL is also making a bigger system, and indicating it plans to put MVS on all three of its newly announced end-user machines. One of IPL's big pitches is that its systems are compatible with

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

the 4300s rather than simply 370 compatible. National Advanced Systems has indicated it is developing 4300 compatibility.

Thus, the PCMs are recognizing that the stones upon which they thought they could step across the stream are shifting once more.

The IPL 4400 series systems, based on the company's Expandabus architecture, are priced about 20% below IBM prices, according to President Stephen Ippolito. The channels in the systems are 2 M byte/sec, thus they need the speed matching buffer to accommodate the 3380; Ippolito said he won't announce the data streaming feature until he sees what it is. Leases are available, financed internally and externally.

The new IPL systems are the 4436, 4443, and 4446, all of which are faster than their respective IBM competitors -- 4331-2, 4341, and 4341-2, according to IPL. Each model is field upgradable to the next level.

The 4436 has double the channel capacity of the 4331-2; the 4443 has twice the memory capacity and faster instruction execution than the 4341; and the 4446 is said to be faster than the 4341-2 in most applications. IPL has begun shipments of all but the higher end machine, which is scheduled for third quarter 1981 delivery.

Magnuson's scheduled delivery date prior to yearend for its 42 and 43 models is drawing nigh. The firm said its benchmarks show a prototype "X" to be about 35% faster than a 4341 and about 95% the power of the 4341-2. Magnuson isn't too fond of the PCM label, and insists that it is more than just a PCM; that IBM is a requirement to be in business rather than a reason to be in business. Interestingly, shipments during September were all IBM replacements. About 60% of its base is on lease, much of it third party. EDP/IR suspects Magnuson may eventually make application boxes.

Neighbor Two Pi has integrated controllers into its V32 box, calling it the Foundation, and is now pursuing systems houses with a packaged system including peripherals. The packaged price is under $100K if the order is for five within a year. To support this marketing effort, Two Pi established service in Boston, San Francisco, N.Y.C., with plans for LA and Dallas-Houston.

Two Pi also doesn't allude to being a PCM; it says its system incidentally runs IBM software. Two Pi says it doesn't have to match IBM step for step in the operating systems arena -- the critical factor is that IBM applications software runs on Two Pi systems, the company indicated. Eventually there may be Two Pi software.

USERS PLAN DOUBLE DIGIT DP SPENDING

A survey of 75 users' preliminary central DP budgets indicates users should spend about $62 billion during 1981, or about a 14% to 16% increase over the 1980 figure of about $54 billion, according to International Data Corp.

Although the 14% to 16% is in line with the increase users anticipated for 1980, it's a bit higher than what they actually spent because the recession dampened plans by about 1%. The areas showing the fastest growth continue to be personnel salaries and software. Nondurable manufacturing, government, and services expect the biggest growth in their DP budgets.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

• BABY VAX IS BORN; DEC PACKAGES VAXS FOR COMMERCIAL MARKET. Baby VAX appeared in the form of the 11/750, composed of DEC's homemade gate array chips. The 11/750 is touted as 60% of the 780's performance at less than 40% of the CPU price. Memory ranges from 512K to 2 Mbytes. DEC expects the new 32-bit machine to find a berth in the distributed data processing world. OEM volume prices of the 11/750 start at $47,000 for 512K, console and an eight--line multiplexer. End-user prices start at $89,900 and include two 28 Mbyte (RK07) drives and the VAX/VMS operating system. To boost commercial sales, DEC packaged the VAXs into two Datasystem 700 models. The Datasystem 750 starts at about $110,000 and adds Basic, forms management, Datatrieve and customer support. The Datasystem 780 starts at about $250,000 and also includes a tape drive and the new RM80 Winchester-type 124 Mbyte Winchester drive, instead of the smaller drives. The RM80 has a 33 msec access time and is available on either VAX. The price with controller is $29,900; $19,900 for additional drives. Deliveries of the 11/750 should begin second quarter, 1981. The Datasystems are also available with Cobol for an additional $4,000.

• PLATO STANDS ALONE -- CDC introduced a standalone, floppy-based version of Plato with initial software for reading and math instruction. The terminals include a microprocessor and 32K memory. CDC also created utilities that will enable a central Plato, hooked to a host computer, to receive more programs which can then be copied onto floppies and used by the other systems at a site. The drives cost $4,100; the Micro-Plato systems range in price from $9,900 to $7,500, depending on volume, with lease prices from $535 to $435.

• 370 POWER ON A CHIP comes from none other than IBM. An experimental 5,000 circuit bipolar chip that could handle the data flow of a 370/138 and be built using existing processes was described by IBM scientists. Several registers couldn't fit on the chip; these were placed on a local store.

• SPERRY UNIVAC BOOSTED selected hardware, software, and support prices anywhere from 5% to 20%. Getting the biggest boost -- 20% -- were lease and rental prices for the General Communications Subsystem used with all 1100 Series Systems. Maintenance for the 1100/60 mainframe and memory went up 7%, while purchase, lease, and rental price of the 1100/80 mainframe and memory (except the 1100/80S) rose 5%.

• BELL UNLEASHES DIMENSION PBX with the pronouncement: "energy management is characteristic of many functions to be integrated into a single PBX." Assistant VP Roger Moody's view of the world is that if a signal is transmitted, it's communication -- regardless of how that signal may have been massaged and/or transformed. The new Dimension 600 is designed for medium size businesses up to 900 sets. Dimensions can now handle energy management functions in addition to their PBX roles. The trend is to get users to do their own programming, opined an Info/80 attendee from Western Electric. Bell offers backup power for Dimensions and also Comm-Stor II/SMDR (statistical message detail records) -- built by Sykes -- that allows users to retrieve various reports. Bell also extended its variable term payment plan from the 4540 terminal to voice in the Dimensions as part of its goal for uniform prices. After filing of variable term payment plans in various jurisdictions, the old two-tier plan will be dead, Moody said. Some perceive the variable term plan, essentially a long-term lease, as a move to lock in users vs Rolm.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

EDP industry report

• THE INTERNATIONAL DATA CORPORATION'S NEWSLETTER FOR EXECUTIVES CONCERNED WITH THE ELECTRONIC DATA PROCESSING INDUSTRY

"THE GRAY SHEET" SEPTEMBER 26, 1980 • VOL.16,NO.10 P.J. McGOVERN,PUBLISHER

FUJITSU EYES U.S. MARKETS, FINDS SOLID OUTLETS FOR MAJOR PRODUCT LINES

The Japanese have been building computers since 1965, gradually selling them off to distant lands, while keeping IBM's Japanese share down to an unaccustomed 30%-40%. Yet, throughout their history, they have remained idle witnesses to the tussle in the main arena, with U.S. firms divvying up more than 80% of the international market.

For years, industry killjoys have warned that the halcyon days were nearing their end -- that computers would go the way of the wrist watch and be indelibly stamped "Made in Japan." But while the musings ran the gamut from healthy circumspection to paralyzing xenophobia, EDP/IR has reserved judgement, taking a "not now, but maybe later" approach.

That "maybe later" seems to have arrived. Recent events indicate that the Japanese are both ready and eager to enter the international mainframe competition; and a look at their hardware and organizational lineups convinces EDP/IR that the challenge is for real.

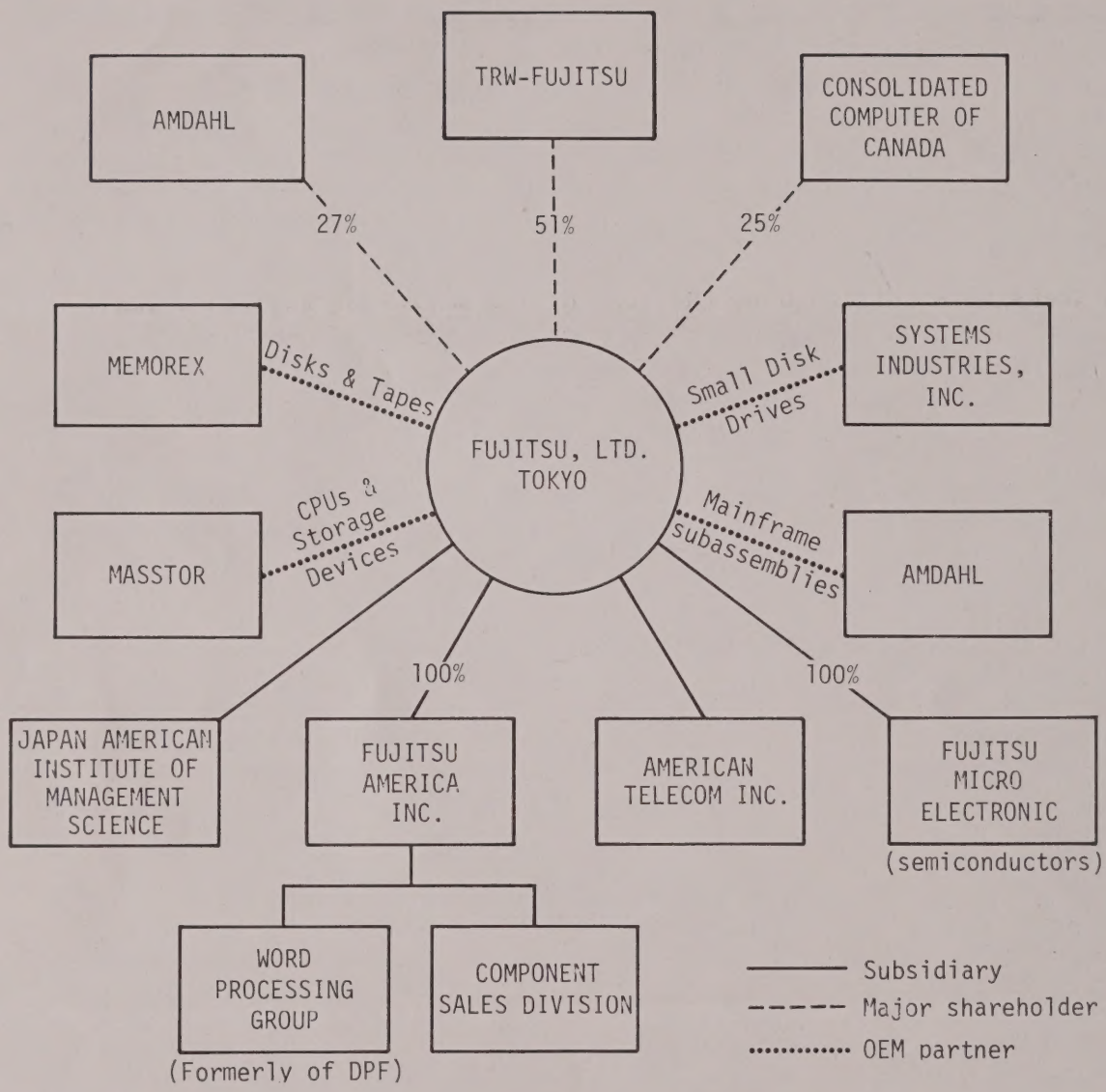
Just as with cars and electronics, the Japanese see penetration of the huge American market as crucial to their industry's eventual success, hoping that 20% of their production -- 60% of their exports -- will be destined for U.S. consumption. And as the U.S. auto industry moves to counter the Japanese incursion -- supported by a growing "buy American" sentiment -- the sale of information processing equipment looms even larger in the Japanese international game plan.

More than any other Japanese firm, Fujitsu Ltd. has managed to keep its name in the papers, with a burst of acquisition activity and glowing hardware reviews. Recent ventures include small business systems, semiconductors, digital PBXs, supercomputers, office automation, and retail and financial point-of-sale devices. These coupled with a growing OEM business have brought Fujitsu to the point where it may soon have U.S. outlets for practically all of its major domestic product lines.

Derailing the expected Amdahl/Storage Technology coupling was just the most visible flexing of its emerging power as Fujitsu now seems determined to play hardball to protect its U.S. interests. In its 1980 annual report, Fujitsu proclaims for the first time that it is supplying large-scale computers to Amdahl on an OEM basis (it has a similar deal with Siemens); formerly this shipment activity was diplomatically labeled as "mainframe subassemblies."

EDP Industry Report is published in annual volumes of twenty-four issues each by International Data Corporation, Post Office Box 915, 214 Third Avenue, Waltham, MA 02254. Entire contents ©1980 by International Data Corporation. **Director,** James Peacock; **Editor,** Molly Upton; **Census Editors,** Paul Arabasz, Lloyd Cohen; **Contributing Editors,** Dave Dillman, John Gantz, Gerard Hallaren, Nancy Scull, Carol Weiszmann; **Circulation Manager,** Mary M. Trayte. Patrick J. McGovern, Chairman, International Data Group, John P. Breyer, President, International Data Corporation. Editorial ideas and information are researched and formulated by the editorial staff. Information and opinions in each issue are based on the best information available, but their accuracy and completeness cannot be guaranteed. **Subscriptions:** One year, $245; three years, $590. Single copies priced as indicated on inside pages. Prices for multiple copies on request. Reproduction without written permission is completely forbidden. Telex 92-3401; Telephone **617/890-3700.**

FUJITSU's U.S. TIES



Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

Similarly, when American Telecommunications Corp. (ATC) wanted to increase its share of PBX manufacturer American Telecom, Inc., Fujitsu said no, and bought ATC's 18% share. This kept out ATC owner General Dynamics -- also owners of PBX vendor Stromberg-Carlson -- and ensured a clear path for Fujitsu's own FETEX PBX product line now being sold as American Telecom's FOCUS series.

Even when dealing with a multinational powerhouse like TRW, Fujitsu seems to have come out on top. A 51% share of that joint venture gives Fujitsu control over the type of marketing/service/distribution network deemed essential for foreign vendor success. Significantly, it is the TRW tie which will finally enable Fujitsu to sell DP equipment in the U.S. under its own name.

TRW -- a gateway to the small systems market?

TRW-Fujitsu indicates that Fujitsu was not intimidated by the performance standards of IBM's 4300 series. Although the joint venture drew headlines by phasing out TRW's manufacturing of retail and financial point-of-sale systems, Fujitsu seems more intrigued by the idea of TRW marketing Fujitsu's small V 830 and larger M series computers -- with operating systems that just happen to be comparable to DOS/VS and MVS.

According to Garret Fitzgibbons, Vice President and General Manager of TRW-Fujitsu, the V series machines could be introduced as early as 1981. They will be priced in the $25,000 - $150,000 range, and will compete with the IBM System/34 & 38 and the Univac System 80.

The M series would square off with the 4300s. Both Fujitsu and Hitachi have made impressive responses to the January 1979 IBM announcement. Not only have they managed to incorporate 64K chips, but they claim rights to some impressive price/performance data (see chart, page 4). According to Fujitsu's own figures (published in IDC's EDP Japan Report, May 22, 1979) the Fujitsu Model 140F has 1.6 times the performance as the 4331 for about the same price, while the 160F is equivalent to the 4341 at only 90% of the cost. Equivalent Hitachi models are said to offer similar power.

But IBM figures disagree; according to recently disclosed IBM records, Fujitsu's M180-AD offers 98% of the performance of the 4341. Its M140F offers 70% of the 4331, with the Models 150, 160, and 160S falling proportionally in between. Pricing information is incomplete since the products have never been marketed in the U.S.

Fujitsu is free to offer the low end of the M series since these machines sit well below anything made by Amdahl; the Model M190 and up will most likely not be offered here because of the spirit of that agreement. If the middle machines are not moved by TRW, Fujitsu is reported to be talking with other U.S. firms capable of software support and hardware maintenance, a decision on future directions of the M series is expected before the end of the year.

If the TRW link fulfills its promise, and if Amdahl and Fujitsu machines continue their tendency to resemble one another, Fujitsu would be in the enviable position of being able to offer a full line of IBM-compatible CPUs. Fujitsu would then become the logical supplier of the necessary peripheral equipment and the whole shebang would be backed by TRW's considerable financial, technological and service/distribution capabilities.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

FACOM M-130F, 140F, 150F AND 160F BASIC TECHNICAL SUMMARY

	M-130F	M-140F	M-150F	M-160F
Main Storage Capacity	512KB-1MB	512KB-2MB	1-4MB	1-6MB
Main Storage Dencity	64K bits/chip (n-MOS)	64K bits/chip (n-MOS)	64K bits/chip (n-MOS)	64K bits/chip (n-MOS)
CPU Logic Circuit	1,500-6,000 gates/chip MOS LSI, 600 gates/chip Bipolar LSI			
I/O Channel/CPU	4	6	8	8
Peak Data Transfer Rate	3MB/sec	4MB/sec	5MB/sec	6MB/sec
Comparative Price Performance to IBM 4331 or 4341	Price: 20% less than 4331 Performance: Same as 4331	Price: Same as 4331 Performance: 1.6 times higher than 4331	Price: 25% less than 4341 Performance: 2.1 times higher than 4331	Price: 10% less than 4341 Performance: Same as 4341
Operating System	OSIV/F2*	OSIV/F2*	OSIV/F2*	OSIV/F2*
OS Maintenance Charge	¥30,000/Mo	¥50,000/Mo	¥70,000/Mo	¥100,000/Mo
Monthly Rental	¥1M** or more	¥1.5M or more	¥3.5M or more	¥4.5M or more
First Customer Shipments	7/79	7/79	12/79	12/79

Note: * Fujitsu offers a package program designated as System Installation Program(SIP) which includes operating system, DB/DC programs, language processor, utility program, etc. under the same concept as IBM's SIPO/E.

** M-130F includes CPU & 512KB, F6733A line printer, two F6417(67MB) disk drives, one floppy disk (1MB), one console display, etc. plus COBOL-based language processor and SORT/MERGE program. Basic configurations for other models are not available.

Fujitsu also offers several new application programs specifically designed for non-computer specialists. Some of them are shown below with monthly rental prices:

	AIF	DQS	STAFF/X
OSIV/F2	¥15,000/Mo	¥50,000/Mo	¥70,000/Mo
OSIV/X8	¥41,000/Mo	¥63,000/Mo	¥200,000/Mo

AIF : Advanced Interactive Processing Facility
DQS : Display Based Query System
STAFF/X : STAFF for Data Base Mangement System Extended

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

It is unlikely that Fujitsu would be content to be merely another supplier of processors. As it becomes increasingly clear that the peripheral and software revenues will be the profit centers of the eighties, Fujitsu will have to get a foothold in this as yet untapped market if it is to meet its 1980 goal of $446 million in exports (an increase of 21% over 1979).

The only hole in the company's present line might be software, although Fujitsu, which started unbundling its software in 1978, has built a new facility in Japan devoted exclusively to software development and has established an independent house known as Fujitsu Dai-Ichi System Engineering, Ltd.

That Fujitsu plans to go head-to-head with IBM is lent further support by the steady supply of seed money that Fujitsu is pumping into Consolidated Computer of Canada (CCC) in which Fujitsu maintains a 25% interest. According to a CCC spokesman, Fujitsu has been willing to spend millions to replicate an 8100-type machine, while also working on a new supermini designed for distributed processing applications. (Fujitsu already has a domestic version of the 8100 in its PANAFACOM DS-7, jointly developed with Matsushita Electric.)

Fujitsu has announced that it will go a step further than IBM by entering into the supercomputer competition. Cray, CDC, and Burroughs will now have both Fujitsu and Hitachi to worry about, as Fujitsu plans to bring its big machines to the market by the end of 1980 with Hitachi following in 1981.

The retail and financial POS business that comes with the TRW link should be a natural fit for Fujitsu. Sophisticated POS equipment has been manufactured in Japan for some time, but the market has lagged behind its more mature U.S. counterpart. In the U.S., only Automatic Teller Machines (ATMs) are assured of high growth rates in the early 1980s, but Japan is expecting across the board POS growth, according to research done by IDC's Tokyo office. Fujitsu's banking hardware is marketed as the FACOM FACT series.

Among financial analysts there has been much discussion of the TRW/Fujitsu deal and some observers have suggested that the 1980s could be a decade potentially filled with such international joint ventures, planting the seeds for the next generation of international industrialization.

What went wrong at the altar?

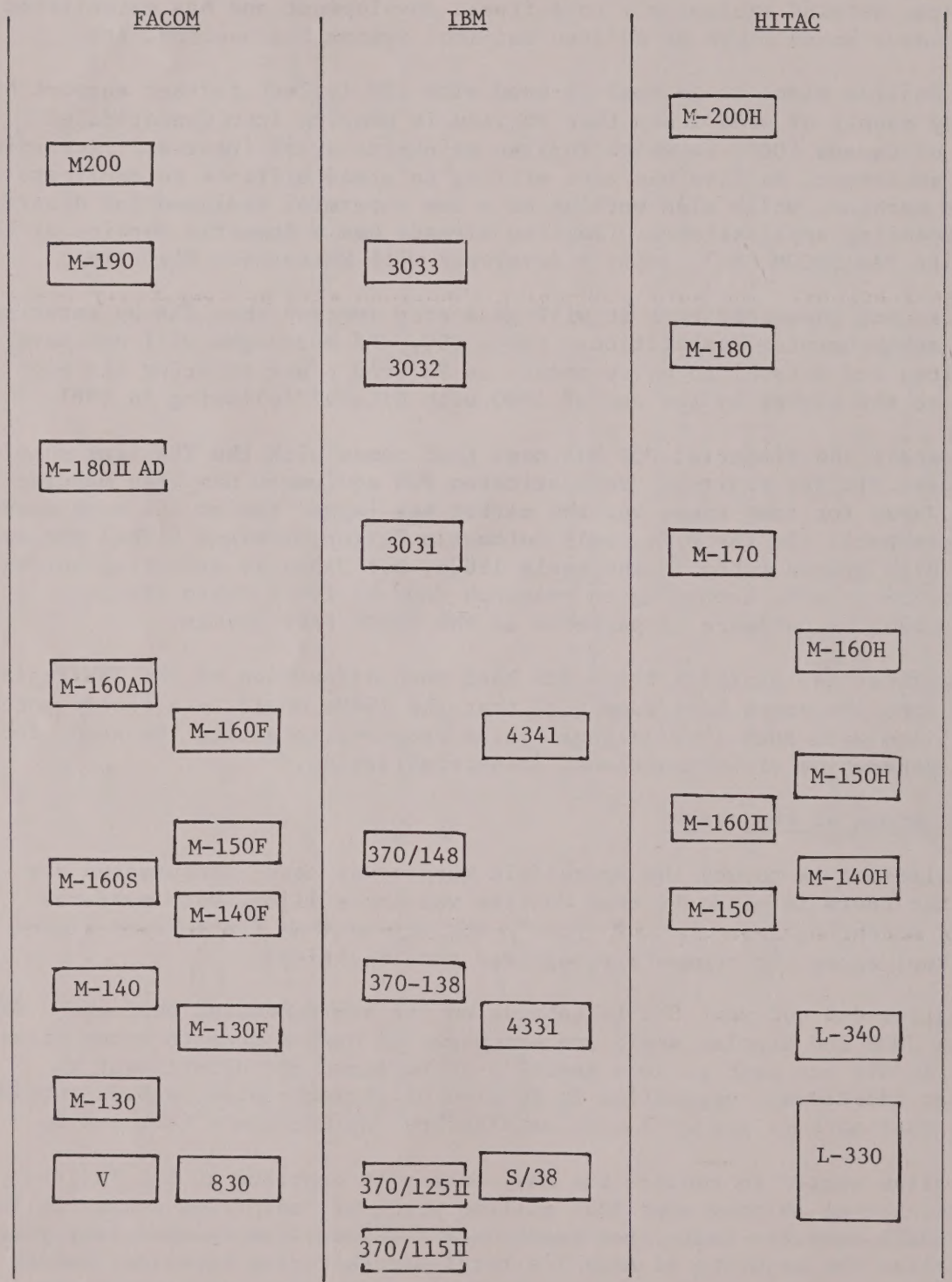
Speculations as to why the Amdahl/STC merger was never consummated are legion, but there is no doubt that Fujitsu was the killjoy, with many commentators wondering less about Fujitsu's motivation than its awkward timing of the breakup; among the commonly recognized possibilities:

- Fujitsu did not want STC to intrude on its semiconductor business. STC makes CMOS and bipolar semis and has begun to market them to other firms. Fujitsu did not want to lose Amdahl's IC business and didn't want to foster additional competition to Fujitsu Microelectronics, a U.S. subsidiary that markets and will soon manufacture Fujitsu semis in the U.S.

- Fujitsu wanted to require the new company to continue to buy Fujitsu parts, having shipped some $235 million worth of "mainframe subassemblies" to Amdahl over the last three years. (The $79 million shipped last year comprised the majority of Amdahl's total manufacturing expenses, making the PCM vendor wholly dependent upon Fujitsu supplies and spare parts.)

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

RELATIVE PERFORMANCES OF
FACOM, HITAC AND IBM MODELS



Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

- STC realized that if it agreed to Fujitsu's demands, it might well end up as addicted to Fujitsu parts and technology as Amdahl had, especially as Fujitsu already has strong ties to STC rival Memorex.

- Fujitsu did not want its prized VLSI technology to be made available to STC, and suggested that the new company be barred from VLSI production. (Fujitsu's very large scale ECL circuit is being reserved for the next generation of Amdahl and Fujitsu machines and will be at the center of both companies' response to IBM's forthcoming H Series.

A mainframe-backed word processor

In April, Fujitsu America bought the word processing engineering group of DPF, Inc. The purchase marked the end of a two-year search by Fujitsu, which plans to market DPF's word processing system in both the U.S. and Europe.

The product is called "the word machine" and it consists of intelligent terminals linked to IBM-compatible mainframes (360s and above) for use in large organizations. The word processing functions will be completely transparent to the CPU, and, as most WP systems do not require large storage capabilities, there will hopefully be room on the existing mainframe -- be it supplied by IBM, Amdahl, or Fujitsu.

The shared resource system presently has 64K of local storage, but Fujitsu is considering expanding this via a bubble memory. Fujitsu's Electronic Components group already supplies 64K bubbles for terminal use. They have also developed Japan's first 256K bubble memory card and have begun sample shipments. According to a Fujitsu spokesman, bubble memory will be readily accepted once problems of standardization have been overcome.

Other troops are on the way

Fujitsu's U.S. forces will not hit the beach without support. Matsushita will make its presence felt in the small systems market as well as semiconductors and has even introduced a word processor through its Panasonic subsidiary. Mitsubishi has finally come out of its Melcom shell and has begun to market CRTs, small business computers, and semiconductors under its own name. Then there is Hitachi, which is OEMing CPUs through National Advanced Systems -- including the new AS/9000 boasting twice the performance of the 3033 -- and expects someday to sell computer systems under its own moniker.

These are just the crest of a wave of companies that includes Ricoh, Casio, Toshiba, Sanyo, Sharp, NEC, and Oki Electric, any one of which has the potential to intrude into the U.S. domain, especially as the hardware emphasis slides down toward smaller-scale users and the computer marketplace begins to bear closer resemblance to the world of retail electronics.

However, of all the Japanese computer manufacturers, Fujitsu has the most to gain from the U.S. export market. Unlike Hitachi, Toshiba, or Mitsubishi, Fujitsu is not a diversified manufacturer; it doesn't make air conditioners, color TVs, or cameras, and thus its attention to computer marketplaces has been characteristically unwavering. Just last year, Fujitsu supplanted IBM Japan as the Number 1 manufacturer in the Japanese market, and while no one is predicting anything of that sort in the U.S., few people expect that Fujitsu will stop fishing in U.S. waters or that it will come up empty-handed.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

• OUT OF AN UNKNOWN BAG OF TRICKS Nippon Electric Co. (NEC) has pulled the world's most powerful commercial computer, promising delivery by October 1981. Because of past ties with Honeywell, the new ACOS 1000 machine is "roughly compatible" with Honeywell equipment. Though billed as a commercial processor, the 15-29 MIP system uses integrated array processors that are capable of the vector analysis used in scientific calculations. Among the specifications: a cache of either 128K or 256K that operates at ten times the speed of main memory and a data transfer rate of 100 megabytes/second. Lease prices begin at $130,000/month, but NEC claims that it hasn't decided whether it will market the ACOS 1000 in the U.S.

• TIRED OF PLAYING THIRD FIDDLE, The European Economic Community (EEC) is pooling $140 million to begin catch-up operations in the race for the semiconductor dollar. EEC believes that the best of Europe is about four years behind the U.S. in technology and productive capacity, and that such a gap will have a deleterious impact on even noncomputer European industry. The program will try to unite national development efforts, while pumping more money into university research and improving chip production equipment. Presently, Europeans provide a paltry 6% of the world's chips.
. . . and Uncle Sam is also being told that chip research is worth supporting. A Washington-based consulting firm has detailed a program of suggested governmental policies that singles out semiconductors as being "critical." The Bedell Associates package recommends that a Product Credit Corp. be set up within the Department of Commerce in order to countervail any subsidized pricing by foreign competitors. They also claim that the Commerce Dept. should have an IC task force that will monitor the state of the industry and become involved in international semiconductor market research.

• JUST WHAT IS SOFTWARE ANYWAY? That's the question Massachusetts judges are asking themselves as they debate the issue of taxing software purchases. Massachusetts law calls for taxes on the sale of most property, but not on intangible professional services. ADAPSO and other industry groups have argued that when someone buys a tape containing software instructions, they are actually buying the professional time the tape represents rather than the tape itself. Hmm, seems like a record or publishing company could claim the same thing, but either way the court decision will set a precedent.

• ANYTHING TO FIND SOME MORE OIL ... The U.S. government has approved the installation of an IBM 3033-based system in China that will be the largest computer system ever sold to a Communist country. The $15 million system will be used for processing oil exploration seismic data. Just how open the sale of high technology products will become remains to be seen. Some think there may be a quid pro quo arrangement guaranteeing the U.S. access to certain natural resources. However, despite a flurry of recent sales to China, the word is out that China is pulling back the reins on its computer projects due to budget problems and internal economic reforms.

• BORED WITH THE EIGHTIES ALREADY? ... Then go talk to the Japan Information Processing Development Corp. (a MITI agency). JIPDEC has begun its second year of trying to conceptualize just what the fifth generation of mainframes will look like in early 1990s. Interestingly, foreign R & D organizations are being invited to participate.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

EDP industry report

• THE INTERNATIONAL DATA CORPORATION'S NEWSLETTER FOR EXECUTIVES CONCERNED WITH THE ELECTRONIC DATA PROCESSING INDUSTRY

"THE GRAY SHEET" SEPTEMBER 9, 1980 • VOL.16,NO.8,9 P.J. McGOVERN,PUBLISHER

MORE ENTER PCM FRAY DESPITE TIGHTER PRICING SCHEMES BY IBM

Time was when the plug-compatible mainframers' theme song was "more for less" than Big Blue. They may be singing that song vehemently even now, but a look at the price/performance values of hardware from the PCMs and IBM shows surprisingly little difference. A recent IDC survey of IBM users reveals they are very faithful to Big Blue.

Of course, there are architectural differences, which many of the PCMs are touting as providing them facile upgrade capabilities -- notwithstanding the threat of changes in IBM's microcode -- but on paper, the prices look similar.

Despite the climate, two more enterprises have thrown their hats into the PCM mainframe ring -- both veterans in competition with IBM. Gene Amdahl is starting his own firm -- again -- targeting the H series market, and Joe Kruy, president of Cambex, formerly Cambridge Memories, said his firm plans to make and market plug-compatible CPUs using licenses obtained from IPL, which makes the Omega CPUs sold by Control Data Corp. National Advanced Systems has broadened its line with two CPUs for its low end and several enhancements, and announced the granddad of systems, the AS 9000, twice the 3033's performance.

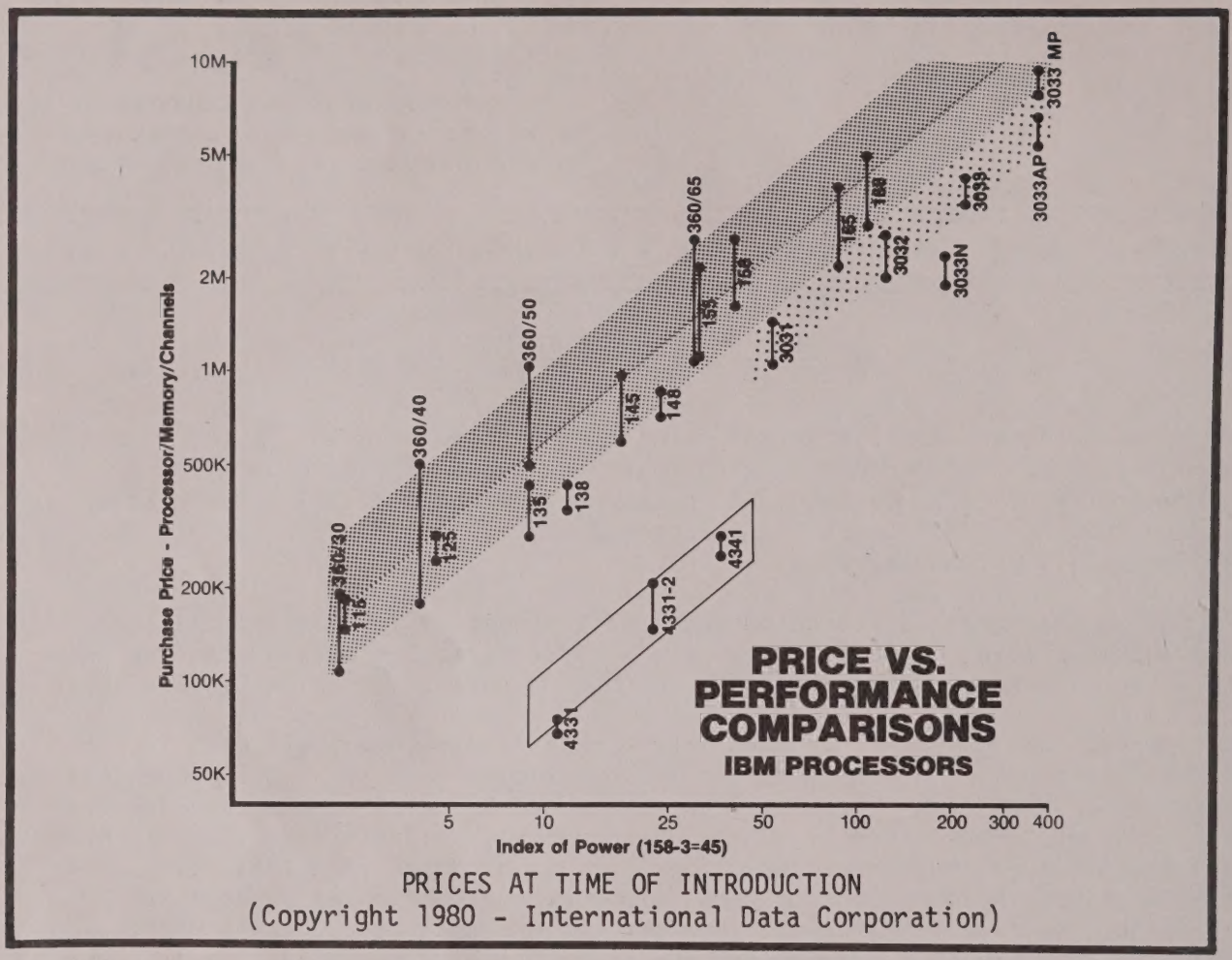
With International Data Corp.'s index of power numbers derived from vendor claims for the IBM 4300 line and the PCMs, a couple of factors become apparent from the graphs on pages 2 and 3:

- The spread between the 4300's band and the 303X processors on a price/performance chart is narrowing. IBM has been raising 4300 prices and lowering 303X prices.

- The PCMs no longer stand out as offering "more for less." Increasingly the IBM systems are positioned much closer to the PCMs than was true in the past. Thus the PCMs may have their work cut out for them. Magnuson seems to have been very price conscious and is visible for its price/performance advantages. But in general many PCMS are very close to IBM; CDC's prices are higher.

- None of the PCMs has bothered to go after the 4331 market. Perhaps they view that arena as already occupied by the mini makers and/or as too little cash per box to warrant the effort.

EDP Industry Report is published in annual volumes of twenty-four issues each by International Data Corporation, Post Office Box 915, 214 Third Avenue, Waltham, MA 02254. Entire contents ©1980 by International Data Corporation. **Director,** James Peacock; **Editor,** Molly Upton; **Census Editors,** Paul Arabasz, Lloyd Cohen; **Contributing Editors,** Dave Dillman, John Gantz, Gerard Hallaren, Nancy Scull, Carol Weiszmann; **Circulation Manager,** Mary M. Trayte. Patrick J. McGovern, Chairman, International Data Group, John P. Breyer, President, International Data Corporation. Editorial ideas and information are researched and formulated by the editorial staff. Information and opinions in each issue are based on the best information available, but their accuracy and completeness cannot be guaranteed. **Subscriptions:** One year, $245; three years, $590. Single copies priced as indicated on inside pages. Prices for multiple copies on request. Reproduction without written permission is completely forbidden. Telex 92-3401; Telephone **617/890-3700.**



PRICES AT TIME OF INTRODUCTION
(Copyright 1980 - International Data Corporation)

Apparently, IBM users are being more than a little faithful to Big Blue, according to preliminary results of an International Data Corp. survey. Of 137 IBM sites with 370/145 and above that are adding or swapping systems, fewer than 1.5% are installing PCM systems. And about 33% of the nine sites with PCM gear are opting for IBM when they procure an additional CPU.

Hardware isn't whole story

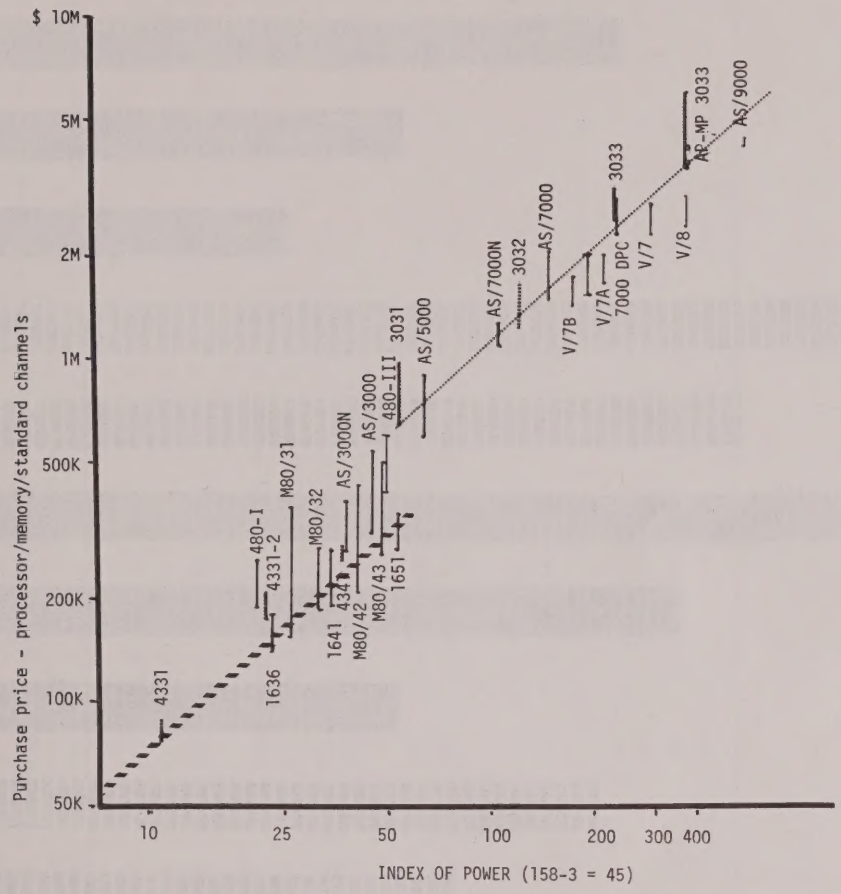
Admittedly the figures contained in EDP/IR are a simplistic attempt to represent the world in two dimensions, based on hardware price performance. And since IBM decided to unbundle with a vengeance, hardware is indeed only part of the story. Some clues can be gained from software/maintenance.

And then there are features that aren't mentioned, such as the CDC Omega II's alleged ability to run rings around a 4341 in a heavy interactive environment, according to one enthusiastic CDC user. But when expanding, even that user obtained a 4341 -- on a two-year lease. He explained that the 4341 was a good choice until he decides to get another Omega II.

IBM was clearly using new disk technology as a lure for its 4300 series, to revitalize its 303X series and to persuade users to convert to MVS/SP. One 3033 user indicated that the disks weren't a carrot, but rather a club to get users onto the MVS bandwagon. Apparently the lure of the disks was working; EDP/IR found an NAS user who opted for a 4341 because of the fixed block

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

PRICE VS. PERFORMANCE COMPARISONS -- IBM VS. PCMS
CURRENT PRICES
(Copyright 1980 - International Data Corporation)



architecture 3370 disk drive, which he figures will be much more appropriate for the particular application of his system.

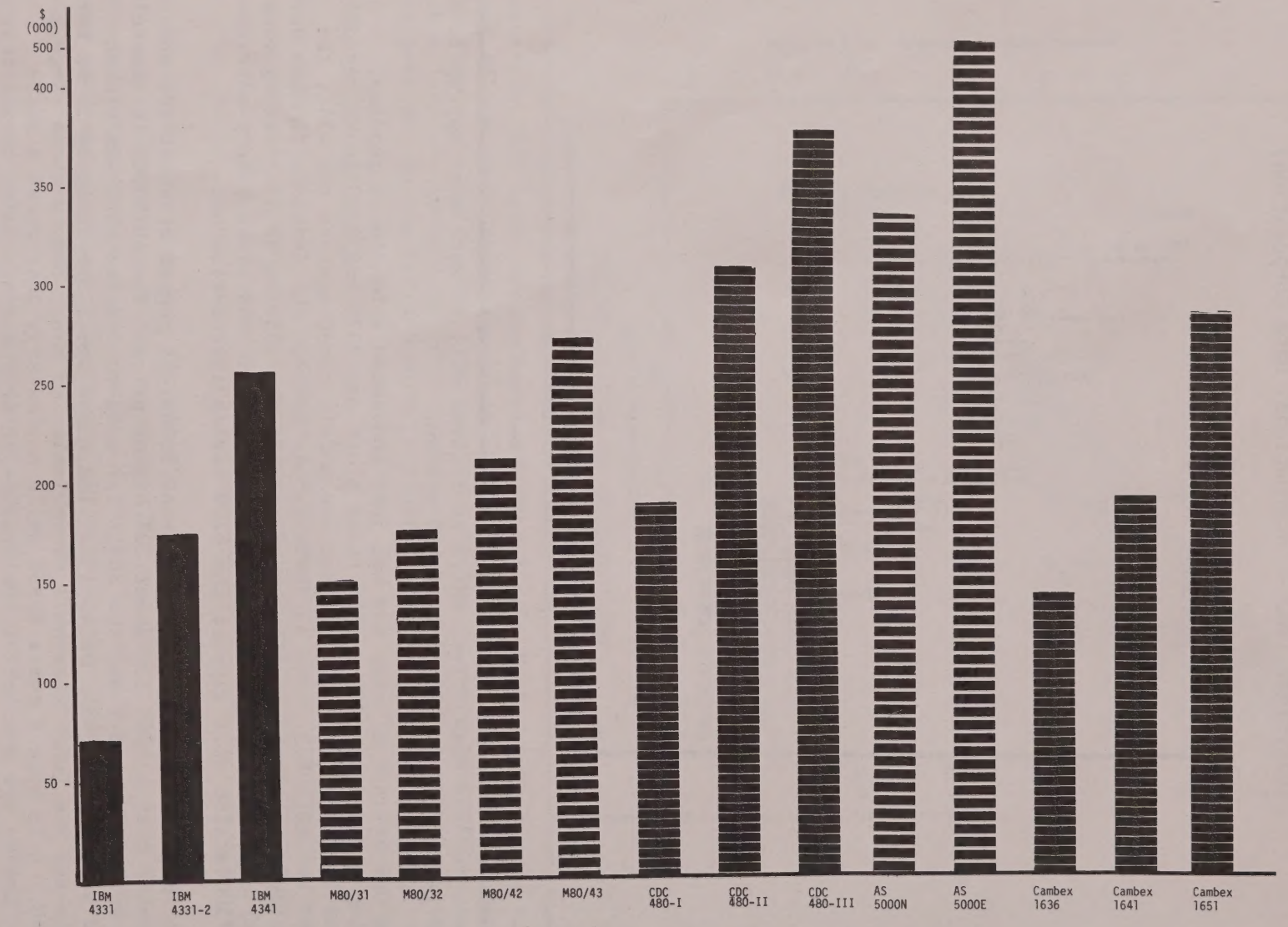
But NAS was not asleep, and has just announced a bundle of goodies, including acceptance of the 3370 fixed block and 3375 and 3380 count key data disks on its AS/5000 as well as two new models aimed against the 4341, the AS/5000N and AS/5000E. The AS/5000s embody many of the features IBM has been announcing recently, including acceptance of the 3380 in data streaming mode at 3M byte/sec and software such as MVS/SP support and cross-memory services. The AS/5000s also will support the 4300 series instruction set.

The smaller of the new units, the AS/5000N, is pegged at about 20% more performance than a 4341 for about 20% higher price. The AS/5000E is scheduled to fit between the 4341 and the 3031, intended to compete with IBM's unannounced but expected 4351 or 4341-2. The N and the E are designed to be upgradable and run DOS/VSE as well as varieties of MVS. Memory sizes range from 2M to 8M. A 2M byte N costs $335K while a similarly configured E costs $500K. Leases are available. Deliveries of CPUs are scheduled to start in October, but many of the options and enhancements, such as a speed matching buffer to allow the N and the E to support the 3370, 3375, and 3380 disks, will not be available until at least the third quarter of 1981. In this game, PCMs must wait for IBM to ship its product first.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

HOW PCMS STACK UP AGAINST IBM 4300S
PURCHASE PRICE -- CPU/MEMORY/STANDARD CHANNELS
(Copyright 1980 -- International Data Corp.)



All memory 2M bytes except 4331, 480-I with 512K bytes

IBM 4300S AND PCMS
(CPU, Memory, Standard Channels)
(Copyright 1980 - International Data Corporation)

CPU / Features	IDC Power Rating	Purchase $	Lease ($) (+ Maint.)	Yearly Lease	Term Years	Maintenance (MMMC) Hardware Mo.	Hardware Yr.	Local Software Mo.	Software Yr.	Year's HW Maint. as % Purch.	Remote Diagnos.	MP Ability	$/Mbyte
IBM 4331 *	11	76,565	1,906	22,872	2	160	1,920	627		2.5%	Yes	No	15,700
IBM 4331-2	22	174,015	4,896	58,752	2	253	3,036	-		1.7%	Yes	No	15,700
IBM 4341	37	257,250	6,390	76,680	4	498		670 **		2.3%	Yes	No	15,700
M80/31	26	150,700	4,854	58,248	2	513	6,156	190	2,280	4.3	Yes	Loose	15,700
M80/32	32	185,700	5,852	70,224	2	513	6,156	190	2,280	3.3	Yes	Chan.-	15,700
M80/42	41	210,000	6,410	76,920	2	922	11,904	512	6,144	5.7	Yes	Chan.	15,700
M80/43	48	270,000	7,834	94,008	2	922	11,904	512	6,264	4.4	Yes		15,700
AS 5000N	45	335,000	NA			1,800	21,600	600	7,200	6.4	Not	No	50,000
AS 5000E	54	500,000	NA			1,900	22,800	600	7,200	4.6	Yet	No	50,000
CDC 480-I*	21	188,000	6,267	75,204	3	1,320	15,840	Nego-		8.4	Varies	No	30,000
CDC 480-II	27	309,000	10,300	123,600	3	2,165	25,980	tiable		8.4	by	No	30,000
CDC 480-III	49	375,000	NA								Locale	No	30,000
Cambex 1636	23	140,000	NA			NA		NA			Yes	No	15,000
Cambex 1641	35	190,000	NA			NA		NA			Yes	No	15,000
Cambex 1651	52	282,000	NA			NA		NA			Yes	No	15,000

* = 512K, all others have 2M bytes
** = for MVS or MVS and DOS/VSE; $627 if DOS/VSE and/or VS1 and/or VM370.

Notes: The IDC Relative Performance Ratings are based on vendors' claims for their machines vs. IBM units. IDC does not dispute the existence of inconsistencies. For example, the CDC Omega 480-II and the Cambex 1641 are both based on the same CPU from IPL Systems. CDC measures its Omega vs the 370/148 while Cambex makes claims vs. the 4300 line.

National Advanced Systems lowered prices on its AS/3000s and is marketing them as 158 replacements.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

Cambex plans processors

Cambex Corp. (formerly Cambridge Memories Inc.) plans to offer three PCM CPUs in the range of the 4331-2 to above the 4341. The CPUs are based on the IPL designs, which are now sold by Control Data Corp. as the Omegas, and which will also be available in Europe through Olivetti Corp. Cambridge at one point owned 40% of IPL, a startup by former Cambex employee Steve Ippolito fostered under the Cambridge roof. (Cambex and IPL still are under the same roof.) Cambridge sold that 40% back to IPL this spring in return for about $4 million cash, which IPL had received from Olivetti, which in turn had received funding from St. Gobain. Also part of the Cambridge-IPL bargain was the design and manufacturing rights to IPL's current product line.

It looks like Cambex's charter is in the lower end of the line, while IPL probably plans to attack the range above the 4341. For instance, Cambex is precluded from offering the top of its line, the 1651, which is said to be 50% more powerful than its 1641, until the second half of 1981. Cambex apparently can increase the performance of its machines so long as they are designed for special purpose markets.

Thus Cambex may be mounting plans to provide applications boxes rather than playing the straight money and performance game of the other plug-compatible mainframers. Because the systems' architecture has quite a bit of microcode, there is the possibility the microcode can be optimized for specific types of applications. However, at the time of announcement, Cambex could not delineate which markets it is contemplating. As a supplier of semiconductor memories, it is not surprising that Cambex is offering more memory than does IBM. The 1641 and 1651 can handle up to 8M bytes.

Cambex is talking about offering systems both through direct sales as well as through systems houses. A likely course would be to hook up with some software firms. Cambex also plans to integrate all controllers (thus capturing more systems value). In addition, there will be a channel-to-channel adapter and a data communications adapter.

The systems use emitter coupled logic circuits with 50 nsec machine cycle speed and 16K RAM. The family of models consists of the 4M byte 1636, which is an upgrade from the 1638, to give about 15% better performance than a 4331-II; a 1641 that competes with the 4341; and the 1651, which can be a field upgraded in the second half of 1981 and will offer about 20% greater performance than 370/158-3.

Cambex says its processors offer about 30% to 35% improvements in cost-performance compared with IBM. A 1636 with 1M byte sells for $125K vs $150K for a similarly equipped 4331-II. A 2M byte 1641, with about the same performance as a 4341, costs $190K vs $265K for a similar 4341, according to Cambex. Both systems are available now. Field upgrades to the top of the line for the 1636 and 1641 cost $160K and $92,500, respectively. Or a 1636 can become a 1641 for $70K. Upgrades will be available in the second half, 1981.

Taking a page from the minicomputer arena's fascination with add-in memories, Cambex is offering add-in memories for IBM systems, thus eliminating further consumption of floor space. However, because of initial user reluctance to put anything inside an IBM CPU, Cambex has only installed add-in memory at about 20 sites so far.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

NAS 9000 Tops 3033, V8 in Power

National Advanced Systems decided not to wait until IBM unveils its next large system. The Hitachi-built AS/9000, boasting power about twice that of a 3033, sells for $4,520,000 in its maximum configuration of 16M bytes, 16 channels. The minimum configuration includes 8M bytes and 12 channels. Memory is priced at $40,000 for 2M bytes, thus lowballing IBM's $75K/M byte price on its systems larger than the 4300s. NAS is scheduling first shipments for November, although it won't have an AS/9000 inhouse until October 1. Thus what had been a rather stagnant two-way race between Amdahl Corp. and IBM is now taking on new dimensions with NAS and Gene Amdahl's new venture.

GENE AMDAHL TAKES OFF ON OWN -- AGAIN;
TARGETS H SERIES MARKET

While some quake in their boots at the spectre of H, there are others to whom such an event is a challenge. Gene Amdahl, architect of the IBM 360 line and Amdahl's product line, is again embarking on an adventure of designing his own large system. This is not perceived as "just another startup" -- of which there are nearly as many now as in the olden days of the late 1960s -- this event could be major. EDP/IR presents some scenarios:

What is the impact of Gene Amdahl's departure from Amdahl Corp. in the short term?

- Minimal from a product design point of view. Amdahl had not been active within the company for over a year.

- Not so minimal from the standpoint of the public's perception of Amdahl Corp., which once portrayed itself successfully as the young American company that dared to become the first PCM and challenge IBM. But with recent events such as the axing of the Amdahl Corp.-Storage Technology Corp. merger, Amdahl's departure leaves the public staring squarely into the eyes of a Japanese-controlled company. The writing is on the wall for all to read. Fujitsu owns about 26% of the stock, and will own 31.5% after the recent stock offering. With the distinct possibility that protectionist "buy American" feeling is rapidly mounting in the U.S., the Amdahl-Fujitsu bond could be a problem that is not easily solved by fancy software code.

What is the long-term effect of Amdahl's new venture?

- Potentially massive. With another competitor in the market for size class 7 machines (of the 3033 ilk), those most likely to lose market share are the other PCMs rather than IBM. There are about 1,100 sites with size class 7 CPUs currently, according to IDC.

- Key design personnel at Amdahl Corp. may follow Gene. Cliff Madden, the chief financial officer, has already thrown his hat into Gene's ring. The lure of designing something new cannot be underestimated. Amdahl Corp. appears to have been essentially in a holding pattern for some time with regard to systems design, concentrating on countering and/or besting IBM software/firmware code. Will these people be at Amdahl Corp. when it needs them to

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

counter H? H could loom as a bigger stumbling block in the minds of potential customers. And the future could loom as a bigger unknown to Amdahl Corp. with the prospect of Amdahl out there.

How soon can Amdahl deliver?

- Probably fairly fast -- if the VLSI technology is in place. He has gained a lot of experience on the last round -- getting financing, designing, really getting a company up and running -- and encountering curve balls from IBM in the form of the virtual memory 158. IDC predicts he can deliver product within about two and a half years. But the more important question is how long after H is shipped will he deliver? Probably between six and eighteen months. IDC is saying first H shipments about third quarter 1981, so that makes Amdahl's shipments about second half of 1982. Amdahl is more cautious -- he is saying sometime by 1984.

Can he find adequate financing, estimated to be between $50 million and $100 million? The Amdahl Corp. consumed about $45 million before delivering a V/6 after five years of development.

- You bet. He's proven himself -- twice -- once within IBM's womb and once on his own, and after having had to go into hock with the Japanese the first time around, you better believe the stock market won't let that happen again. Likely contributors or bank rollers:

  + Gene Amdahl

  + Jesse Aweida and Storage Technology Corp. STC went to the money market Monday and Gene Amdahl resigned the next day. Coincidence?

  + John Q. Public and venture firms, banks, etc., should provide the funds after privately raised capital is consumed. Or, if Amdahl wants to join a partial basis, there may be several prospects, most of which could help with fabrication and/or subassembly.

Those with facilities and or inclination to help Amdahl might be:

- Storage Technology Corp. last year acquired a custom chip house, Microtechnology Corp., and has been amenable to linking with a mainframer -- witness its unconsummated merger with Amdahl Corp.

- National Semiconductor Corp.'s Charlie Sporck is forever berating the lack of quid pro quo re tariffs with the Japanese. But his National Advanced Systems unit (nee Itel) is busily peddling Hitachi gear as the upper end of its line.

- Intel Corp. has its hand in the software pie with its acquisition of MRI -- with rumors of a data base machine -- and might be interested in participating in the mainframe market, if only in subassembly.

- Wang's chief, An, has reiterated his company will have a system in the 3033 range. But its VS 100 is delayed 'til first quarter 1981. Might be a long shot linkup.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

DESKTOP COMPUTER MARKET
(U.S.-BASED MANUFACTURERS)

	Number Systems Shipped	Cumulative Number in Use	$ Million Value Shipped	$ Billion Value in Use
		WORLDWIDE		
1974	2,000	3,000	$ 34	*
1975	4,000	7,000	50	$ 0.1
1976	12,000	19,000	170	0.2
1977	45,000	64,000	390	0.7
1978	173,000	237,000	744	1.4
1979	298,000	535,000	1,229	2.6
1980	445,000	980,000	1,971	4.6
1981	645,000	1,625,000	2,869	7.5
1982	891,000	2,516,000	4,010	11.5
1983	1,193,000	3,709,000	5,262	16.7
1984	1,519,000	5,228,000	6,885	23.6
		UNITED STATES		
1974	1,000	1,500	$ 17	*
1975	2,000	4,000	25	*
1976	7,000	11,000	90	$ 0.1
1977	28,000	39,000	220	0.4
1978	132,000	171,000	475	0.8
1979	200,000	371,000	758	1.6
1980	288,000	659,000	1,249	2.8
1981	392,000	1,051,000	1,713	4.5
1982	529,000	1,580,000	2,345	6.9
1983	685,000	2,265,000	3,048	9.9
1984	849,000	3,114,000	3,815	13.7
		INTERNATIONAL		
1974	1,000	1,500	$ 17	*
1975	2,000	3,000	25	*
1976	5,000	8,000	80	$ 0.1
1977	17,000	25,000	170	0.3
1978	41,000	66,000	269	0.6
1979	98,000	164,000	471	1.0
1980	157,000	321,000	722	1.8
1981	253,000	474,000	1,156	3.0
1982	362,000	936,000	1,665	4.6
1983	508,000	1,444,000	2,214	6.8
1984	670,000	2,114,000	3,070	9.9

COMPUTER MARKET SUMMARY
(U.S.-BASED MANUFACTURERS)

	Number Systems Shipped	Cumulative Number in Use	$ Million Value Shipped	$ Billion Value in Use
		WORLDWIDE		
1974	69,350	266,690	$11,914	$ 58.5
1975	75,600	329,440	12,255	67.1
1976	104,040	410,530	13,349	76.7
1977	174,470	560,460	16,136	89.2
1978	322,910	862,320	19,140	104.7
1979	476,440	1,303,760	22,498	120.1
1980	653,400	1,917,800	24,987	138.7
1981	895,000	2,768,600	28,291	159.9
1982	1,181,800	3,902,100	32,443	184.7
1983	1,527,000	5,378,800	36,988	213.2
1984	1,903,100	7,225,400	42,188	246.2
		UNITED STATES		
1974	47,300	172,740	$ 7,093	$ 33.4
1975	50,300	212,640	6,678	37.9
1976	68,240	264,580	7,114	43.4
1977	116,080	361,820	8,928	50.4
1978	230,660	575,380	10,449	58.9
1979	313,960	862,440	12,160	66.6
1980	417,400	1,252,240	13,671	76.9
1981	549,000	1,770,640	15,552	88.7
1982	713,100	2,449,940	17,943	102.5
1983	896,300	3,311,240	20,508	118.5
1984	1,090,600	4,362,940	23,264	136.9
		INTERNATIONAL		
1974	22,050	93,950	$ 4,821	$ 25.1
1975	25,300	116,800	5,577	29.2
1976	35,800	145,950	6,235	33.3
1977	58,390	198,640	7,208	38.8
1978	92,250	286,940	8,691	45.8
1979	162,480	441,320	10,338	53.5
1980	236,000	665,560	11,316	61.8
1981	346,000	997,960	12,739	71.2
1982	468,700	1,452,160	14,500	82.2
1983	630,700	2,067,560	16,480	94.7
1984	812,500	2,862,460	18,924	109.3

This is the total of all general-purpose computers, minis, small business computers (SBC), desktop computers, and "other" systems such as IBM's S/7. Minis used in SBCs are subtracted to eliminate double counting. Detailed tables follow (General-purpose, SBC, and desktop tables are mutually exclusive, but the minicomputer table includes computers subsequently shipped to users -- by the mini makers or by systems houses -- as small business computers.)

EDP industry report
INTERNATIONAL DATA CORPORATION
214 THIRD AVENUE
WALTHAM, MASS. 02154
(617) 890-3700 ☐ TELEX 92-3401

August, 1980

EDP/IR encloses two revised market summary pages previously printed in the Review and Forecast Issue, Vol.15,No.23,24. Please insert these pages into that issue.

The Industry Analysis Group at International Data Corp. has revised the Desktop Computer Market figures, page 16, specifically the dollar value of shipments, to reflect the value of each individual model, as is the procedure in all other categories. Also, the breakdown of U.S. vs. International shipments was revised. The Computer Market Summary, page 12, has been restated to reflect the changes in the desktop figures.

EDP/IR apologizes for any inconvenience the originally published figures may have caused you.

Molly Upton

Molly Upton
Editor

LIFE IS BETTER -- THE SECOND TIME AROUND

Gene Amdahl's announced intention to start another mainframe company that competes in the range of the future H series should benefit from the hard knocks of experience. Observers are betting he'll have the skids greased this time around. Amdahl Corp. spent about five years and $45 million getting a product out the door, and Amdahl recounts that much of the first few years was spent scratching together capital and key people.

Heizer Corp., the venture capital group based in Chicago, thought it could handle most of Amdahl's requirements, but found its resources outstripped by Amdahl's needs; Amdahl went where the water was warm -- Japan. Also, U.S. semiconductor firms apparently weren't willing to commit production and development time to the fabrication of Amdahl's uniquely designed heat sink that obviates water cooling. Fujitsu was willing and thus the deal was struck -- both as an investor and as a key supplier of subassemblies.

A few milestones in the history of Amdahl Corp. may serve as a reminder of what is involved in creating a sizable mainframer. Founded in 1970, with an issuance of $33,333 in shares to three founders, by December, 1972 the company had 300 employees and letters of intent for $30 million of machines. It planned to make its first delivery within a year. But IBM came out with virtual storage on its 370/158 and 168, and Amdahl scrapped its nonvirtual 470/6, with a book value writeoff of $905,938 in 1975, the same year it shipped its first 470V/6. The company shipped six systems that year, 27 systems in 1976 and 57 in 1977. The company showed its first profitable quarter in the last part of 1975.

Fujitsu was an early participant in financing Amdahl. In 1972, Fujitsu took $6.2 million of Amdahl's $20 million private placement. Nixdorf also took a piece of the pie. In September 1973 Amdahl attempted to go to the public market, but without much success. Then in July 1976 it tried again, and succeeded in issuing 1 million shares of common. After that offering, Fujitsu owned nearly 30% and Heizer more than 24%. Amdahl Corp. then had 547 employees. The company's only delivered product was the V/6. Fujitsu's share of Amdahl, after the August 1980 offering, will be 31.5% including convertible debentures.

Fujitsu also lent a hand in manufacturing. In 1974 it assumed manufacture of subassemblies "to reduce Amdahl's cash requirements." Fujitsu also financed the American importation of subassemblies, provided short-term loans, guaranteed to assume maintenance of systems should Amdahl be unable to provide the service. But there was more than just financial benefit to Fujitsu. There were patent swaps and technology knowhow exchanged. Fujitsu is licensed by Amdahl to make and market computers including the M 180-II under its U.S. patents; but Fujitsu cannot sell its M-190 in the U.S. because Amdahl didn't grant it those patents for this country. Fujitsu is known to be increasingly active in the large scale arena. One Fujitsu engineer, when asked what it would take to make Amdahl competitive with H, replied offguard, "Fujitsu's operating system." An Amdahl Corp. spokesman countered that Fujitsu's operating system, while reportedly very efficient, is not IBM-compatible. Amdahl Corp. has been steadily increasing its software development efforts and in fact has software products it offers to IBM users.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

Market size?

What's the size of the pie these vendors -- IBM, NAS, Amdahl, and presumably Gene Amdahl -- are going to fight over? As of the beginning of 1980, IBM had shipped 1,030 of its 3033s while Amdahl had shipped 15 of its V/8s since September 1979. At that time, Amdahl reportedly had 80 unfilled orders.

There are many users who have stretched their existing horsepower as far as it will go and who are prime customers for bigger gear. Whether to go uniprocessor or multiprocessor is one decision, and what IBM will do is a fairly large stumbling block to some users. However, with the V/8 and the NAS 9000, they cannot complain that there's a dearth of larger machines out there. Should be an interesting next couple of years.

COMMUNICATIONS PROCESSORS HAVE NON-SECTARIAN TASTES; RAYTHEON, BURROUGHS, UPGRADE PROCESSORS

It seems the communications processors are carving out a niche for themselves attempting to eliminate the current Tower of Babel that exists now with different protocols, mainframes, terminals and networks for specialized applications. NCR's Comten unit will provide linkage with SNA nets; Burroughs units support communications via the Burroughs Network Architecture as well as links to X.25 and SNA networks. Raytheon Data Systems (RDS), logically enough for an independent, also stresses tying together multiple mainframes with various protocols and plans to link with SNA in 1981. The folks at RDS coined the phrase "peaceful coexistence" with varied network architectures.

Thus, although various mainframe vendors are all racing to provide the complete womb-to-tomb assortment of terminals, mainframes, distributed processing systems and network tools, they seem to be also recognizing the need for compatibility with other vendors' schemes.

Both Raytheon and Burroughs have upgraded their lines of communications processors, offering systems that enable users to link different types of mainframes and protocols into a common network. Burroughs chose increased emphasis on distributed intelligence within the system, with lots of microprocessors dedicated to specific tasks. Raytheon elected to emphasize a multiprocessor systems approach for units that are reportedly failsafe.

RDS 7500

RDS unveiled the multiprocessor 7500 processor to replace the 500 in future shipments of various Raynet configurations and upgraded software called the Preemptive Communications Operating System (PCOS). Together the hardware and software facilitate the concept of "universal" terminals, thus permitting users to consolidate numerous special-purpose networks. PCOS handles multiprocessor operations and permits priority level multi-tasking, with systems handling as many as 256 priorities.

RDS called the announcement phase two of the process of upgrading its Raynet. The latest addition was Raynet IV, with message queuing, storage, routing, as well as terminal-to-terminal links, all the features associated with electronic mail. (RDS President Tom Markley confided to the press that he wanted to herald the announcement as the coming of true electronic mail but was persuaded to emphasize the nuts and bolts.)

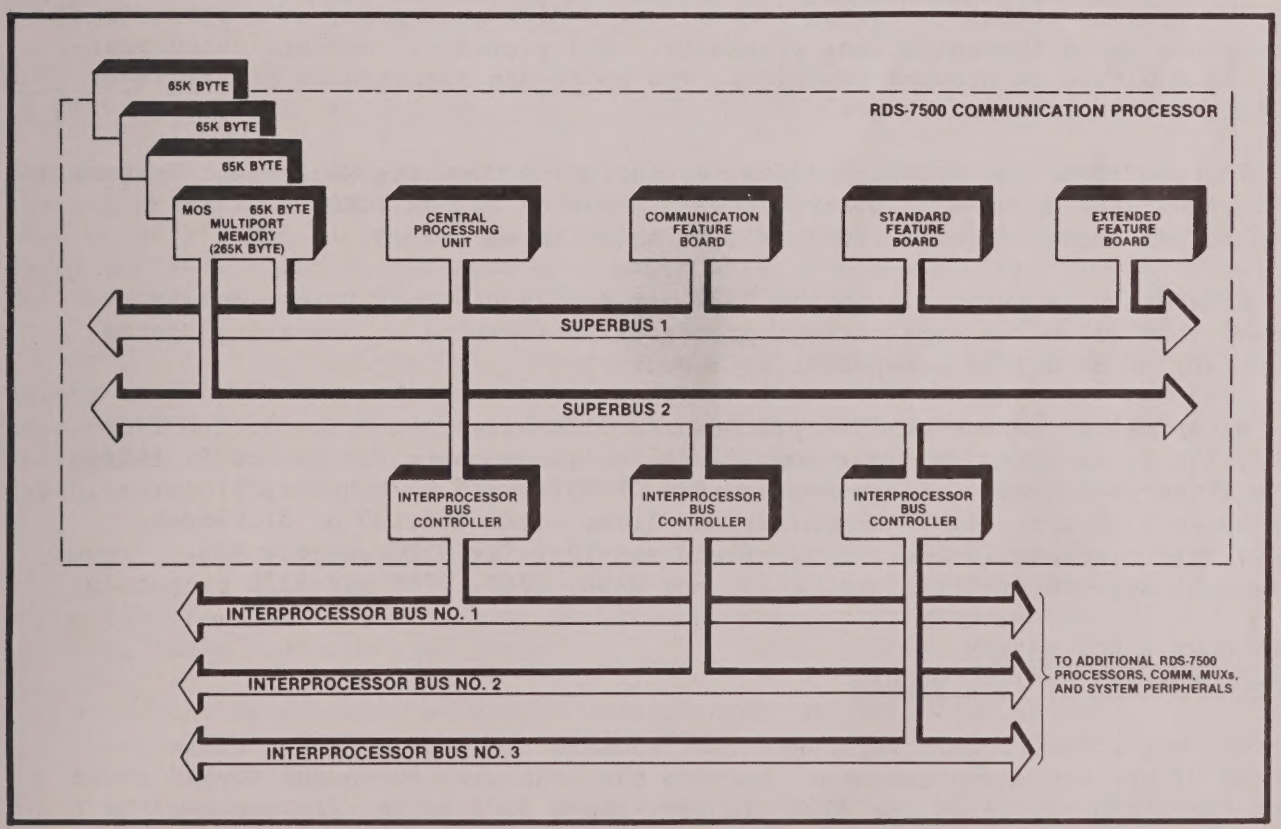
Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

Here's a rundown of the various forms of Raynet offered and planned:

- Raynet I -- line concentration, terminal polling, and network management.
- Raynet II -- multi-host, network consolidation.
- Raynet III -- multiprotocol (reducing need for specialized terminals).
- Raynet IV -- message queuing, storage, routing, terminal-terminal.
- Raynet V -- internodal links (one network's terminal talks with another network's terminal).

The 7500 architecture features multiple busses that allow various ways of linking 7500 processors for redundancy and reliability. This feature eliminates the use of a T-Bar switch between active and standby processors. RDS stressed that the 7500 embodies a multiprocessor approach rather than two uniprocessors strung together. In addition, the multiple busses permit better load leveling. There are two busses: the Superbus, which handles internal processor operations, and the Inter-Processor Bus, which handles controllers that support additional processors, multiplexers and system peripherals.

Other features include buffer chaining and double the previous 500 memory size -- up to 262K bytes, and direct memory access. Buffer chaining permits sending multiple buffer messages with a single command and automatic handling rather than software intervention of interrupts at the end of each buffer.



Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

This makes the 7500 less susceptible to performance degradation during surges in data traffic, RDS said.

System prices start at $59,200 or $1,900/mo. on a five-year lease for a single Raynet I system. A multiprocessor Raynet I configured to support 62 high speed lines with 192K bytes, muxes, adapters, consoles, etc., costs about $360K or $10K/mo on a five year lease. A multiprocessor Raynet IV system with 256K bytes and 15 lines costs $250K. For users upgrading from the RDS 500 to 7500, the cost is between $10,000 and $20,000. Likely markets are airlines, large manufacturers and the financial community.

When will the market take off for something with such bells and whistles as the electronic mail features incorporated in the RDS 7500? At a press briefing, Markley tossed out frisbees labeled "1984?" He said it could be less than a year away or 20 years away.

Burroughs adds to 9500 line

Burroughs also extended its line of communications-processors with two units, the CP 9558 and CP 9572, said to have up to eight times the performance of the entry level CP 9550, twice the internal speed, and more than twice the memory, 1.2M bytes and 1.5M bytes, respectively, vs. the 9550's 640K.

Like the new B 900 processor, the communications devices have multiple microprocessors for dedicated tasks. Whereas the earlier CP 9550 had a maximum of four processors and four communications lines, the CP 9558 and CP 9572 can handle six and eight processors, respectively, and 12 lines.

The systems contain a system controller, a file processor, an applications processor, and a communications processor. All processors operate concurrently. In addition to network functions, the units can function as a host in a distributed processing network.

The new 9500s use existing software, including Computer Management Systems (CMS), Computer Management Distributed Information System (CMDIS), and Transaction Control System (TCS), all of which is unbundled.

Redundancy is available on the 9572 via an Input/Output Select Module (IOSM) that allows an applications processor to serve as an operating system processor or as a file management processor.

A typical CP 9558 with five processors, 512K bytes, 6M bytes in two floppies, 19M bytes disk, and four communications lines costs $39,184 or $1,148/mo on a three-year lease. A seven-processor CP 9572 with 917K bytes, floppies, 77M bytes disk and, eight communications lines costs $65,130 or $1,908/mo. Lease rates include 24-hour, 7-day field service. The 9500s handle SNA, Burroughs Network Architecture, X.25, and HASP, 2780, 3780 and 3270 protocols.

BURROUGHS B 900 SERIES
SMALL BUSINESS SYSTEMS DEBUTS

Someone neglected to tell Burroughs that summers are usually quiet times devoid of product announcements. Despite the heat wave Burroughs forged ahead with the sixth series in the "900" family, the B 900, which fits between the B 90 and the B 1900.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

Burroughs has continued its trend-setting ways of using microprocessors to handle particular tasks, but added a new twist in that up to two applications processors can switch to handle other tasks.

The first model in the series, the B 920, was designed for distributed processing applications but can also be used as a stand alone. It can be programmed in Cobol and RPG. With prices starting at $60,500, Burroughs claims it is the only general-purpose business system of its size and price to use a multiprocessor, multiprogramming architecture. This price includes 640K bytes, 44.6M bytes disk, display, and a 300 line/min printer. Three year lease is $1,956/mo. The maximum configuration includes eight processors, 1.5M bytes main memory, 232M bytes fixed disk, 390M bytes removable.

A number of programs can run simultaneously in designated processors -- all under control of the operating system. Each processor has its own memory. The individual processors span the same functions as in the communications processors: system control, file, applications and communications. The basic B 920 has five processors, including two earmarked for applications; as many as eight processors can be in one system. A maximum system would include either five applications processors or four applications and two communications processors as well as a system and file processor.

Additional processors, whether applications or communications, cost $2,950. The announcement also includes new fixed disks of either 38.6M or 77.2M bytes storage. The 38.6M byte disk goes for $13,500 or $480/mo on a three year lease. A 77.2M byte disk costs $16K or $533/mo on the same lease.

Software costs are $2,500 or $100/mo for MCP; $1,620 or $68/mo for CMS, which assures portability between processors; Cobol is $1,825 and RPG, $1,375.

AT&T OPTS TO REORGANIZE; IS WHAT WE SEE WHAT WE GET?

Remember the phrase "magic is the art of distraction?" While the audience is staring at one event, the magic is accomplished somewhere else. Could it be that Ma Bell's setting the stage to heave into birth a unit handling unregulated business bears resemblance to a magic act? Perhaps the real nub is that Bell created an international subsidiary.

Or could it be that Ma Bell expects the world to be so dazzled by its voluntary split that the world won't perceive the fact that the split gives birth to one of the largest entities in the communications/computer arena, with a healthy dose of vertically integrated manufacturing and marketing capabilities? Teletype and Western Electric for starters. Some notes:

- Any restructuring by AT&T must be approved by the FCC.
- Baby Bell would have about 150,000 employees -- roughly equivalent to IBM's domestic work force.
- Accounting procedures haven't been changed to the independents' satisfaction to prevent cross-subsidization.
- Bell's proposed purchase of units with minority shareholders could eliminate potential shareholder suits arising from cross-subsidies.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

• VAX'S LITTLE BROTHER SHOULD ARRIVE SHORTLY in the form of the Vax 11/580, now in Beta test. Judging from the numbering scheme, this will be only one of many Vaxes. DEC had shipped more than 850 Vax 11/780s by the beginning of this year, with almost as many more orders on hand for 1980 delivery. DEC, whose earnings for the year ended June 28 rose 40% to nearly $250 million, said it spent $210 million for equipment and plant additions in attempts to reduce its backlogs. DEC's revenues from services and other sources rose at 39% compared with a 29% hike for equipment sales.

• PLATO TACKLES BASIC SKILLS in a CETA-funded program to provide unemployed heads of households in Columbus, Ohio, with skills necessary for getting and holding jobs. The Control Data Corp. terminals will be used to help teach reading and math skills needed for employment, such as making change.

• HP ADOPTS GENERAL MERCHANDISING techniques and cuts price of top-of-the-line 3000 Series III by 14% to $92,000 for a 256K system that includes 50 Mbyte disk, operating system, Image data base management system, Query language, and utilities. In one of a series of moves that say "buy now and save $," HP also is throwing in its Cobol II/3000 compiler free for buyers of any HP 3000 through October 31. Word has it that type of merchandising ploy is working. It certainly is an attention-getter.
. . . The HP-85 now has a complete set of general interfaces offered on other HP desktops: serial, parallel, and binary coded decimal, as well as the original HPIB. Thus users can pick and choose their peripherals.

• ACTIVITY IN THE PERSONAL computer front. Zenith has a TV that can be used as an extension phone with speaker-phone features. The set can receive incoming calls when connected to a telephone jack. But probably Zenith has bigger plans for this type of device; Zenith owns Heath, which makes desktop computers, and the TV/phone is a likely link between a desktop and remote data bases and services firms. Columbus, Ohio subscribers to Qube will be able to access the Compuserve service via Atari desktops (Atari is owned by Warner Communications, which is a parent of Qube).

• ACQUISITIONS ARE THE RAGE -- generally of the White Knight variety. NCR indicated it intends to acquire Applied Digital Data Systems (ADDS) at a slightly higher price of $60.6 million than the offer from Mitel, a Canadian firm that apparently is trying to find a growth avenue beyond microprocessors. ADDS has been a long-time supplier of terminals to NCR, which took as much as 40% of its production. But NCR just this year began to make the first of its own line of terminals. The agreement would give NCR a lot of space, in addition to its recently announced expansion plans for chips.
. . . And Storage Technology Corp. has announced intentions to acquire Documation, the Florida printer firm whose balance sheet has been slipping of late, but which has a fair amount of new plant space. STC and Documation gear often reside side-by-side in installations, so the linkup makes sense from the sales/service aspect. STC didn't wait long after it opted out of the proposed merger with Amdahl Corp. STC Chairman Jesse Aweida cried foul on Fujitsu in a quarterly report, saying STC withdrew because of Fujitsu's demands.

• 32-BIT MINI FEVER may be catching -- word has it Honeywell is contemplating a 32-bit Level 6. Others are also pondering the 32-bit path.

Reproduction forbidden. Additional copies airmailed same day, $10 each; single copies to non-subscribers, $20. Call **617/890-3700.**

EDP industry report

• THE INTERNATIONAL DATA CORPORATION'S NEWSLETTER FOR EXECUTIVES CONCERNED WITH THE ELECTRONIC DATA PROCESSING INDUSTRY

"THE GRAY SHEET" AUGUST 15, 1980 • VOL.16,NO.7 P.J. McGOVERN,PUBLISHER

Mainframers' Margins Squeezed in Six Months -- Page 5

WESTERN EUROPE GOOD PROSPECT FOR PLUG-COMPATIBLE MAINFRAMES

There has been heightened interest by vendors in supplying plug-compatible CPUs to the Western European market, witness Nixdorf and Olivetti. Apparently the market is quite receptive to the prospect of switching from IBM equipment. And PCMs are a logical choice because they allow users to keep their software investments, not an inconsequential aspect.

IDC predicts the number of PCM machines installed in Western Europe will more than double between 1979 and 1981, when 725 systems should be installed.

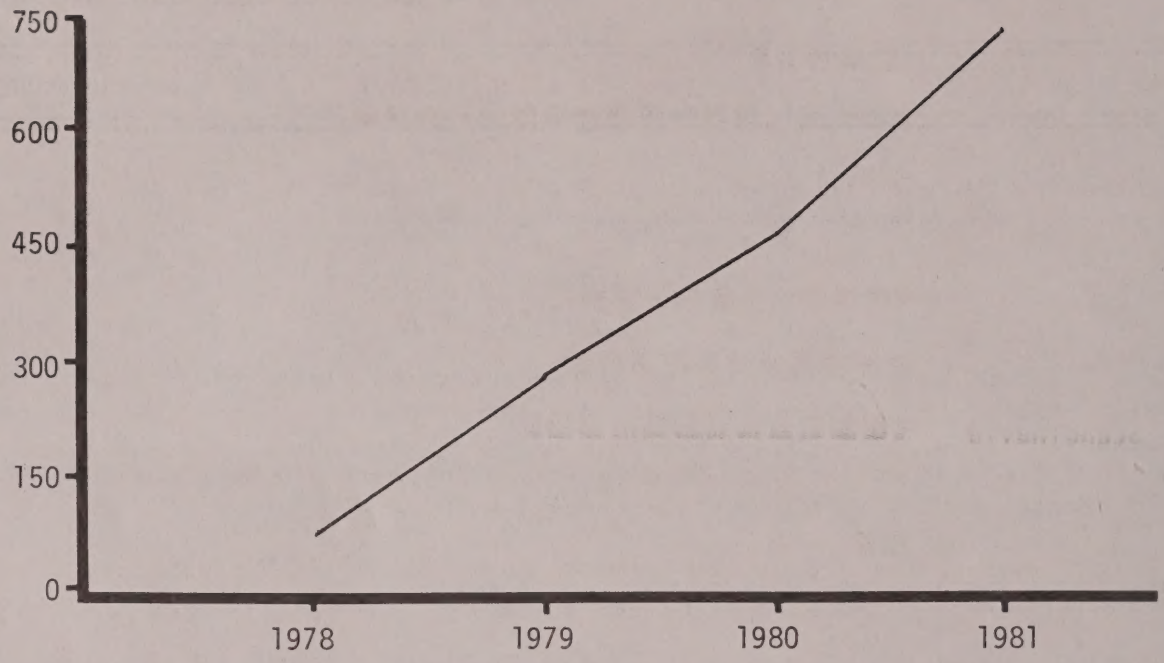
Nixdorf recently announced it plans to enter the PCM market, and even acquired The Computer Software Company. But it isn't clear whether Nixdorf will try to build its own CPU or OEM it, as was the intent with talks involving Two Pi. Olivetti has named IPL Systems as its supplier. In the meantime, National Advanced Systems has the marketing and service arm of Itel, while Amdahl is also busy in Europe.

An IDC Europe study on IBM migration patterns in Western Europe cites a number of factors that could signal a potentially rosy future for PCMs, provided they are well accepted in the various countries:

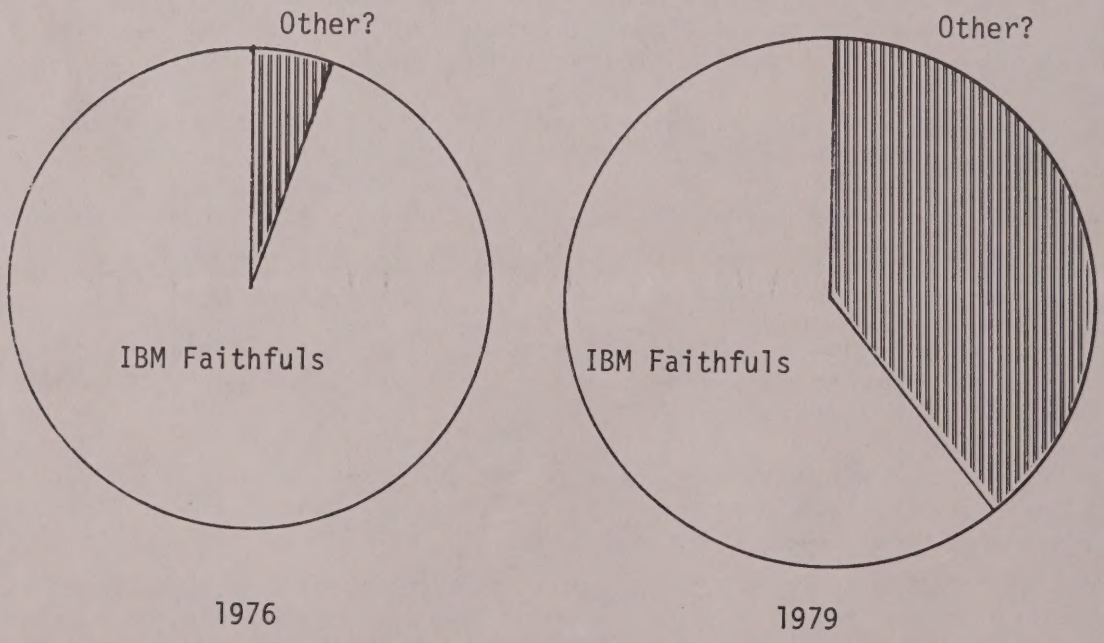
- The installed base of IBM-type general-purpose mainframes should grow 21% between 1978 and 1981.
- Starting from ground zero in 1976, PCMs moved to 5% of the top end of the 370 market in 1978 and IDC estimates their share will reach 22% by the end of 1980.
- Because they have resolved the problem of software compatibility, PCMs have gained more market share from IBM in two years than have the other mainframers in 10 years.
- Much of the European base is expected to churn during 1979/1980; this represents a good opportunity for PCMs. About 69% of 360 users plan to change CPUs and about 67% of 370 users.

EDP Industry Report is published in annual volumes of twenty-four issues each by International Data Corporation, Post Office Box 915, 214 Third Avenue, Waltham, MA 02254. Entire contents © 1980 by International Data Corporation. **Director,** James Peacock; **Editor,** Molly Upton; **Census Editors,** Paul Arabasz, Lloyd Cohen; **Contributing Editors,** Dave Dillman, John Gantz, Peggy Eisen, Nancy Scull, Carol Weiszmann; **Circulation Manager,** Mary M. Trayte. Patrick J. McGovern, Chairman, International Data Group, John P. Breyer, President, International Data Corporation. Editorial ideas and information are researched and formulated by the editorial staff. Information and opinions in each issue are based on the best information available, but their accuracy and completeness cannot be guaranteed. **Subscriptions:** One year, $195; three years, $475. Single copies priced as indicated on inside pages. Prices for multiple copies on request. Reproduction without written permission is completely forbidden. Telex 92-3401; Telephone **617/890-3700.**

NUMBER OF PCMS INSTALLED IN EUROPE
1978 - 1981

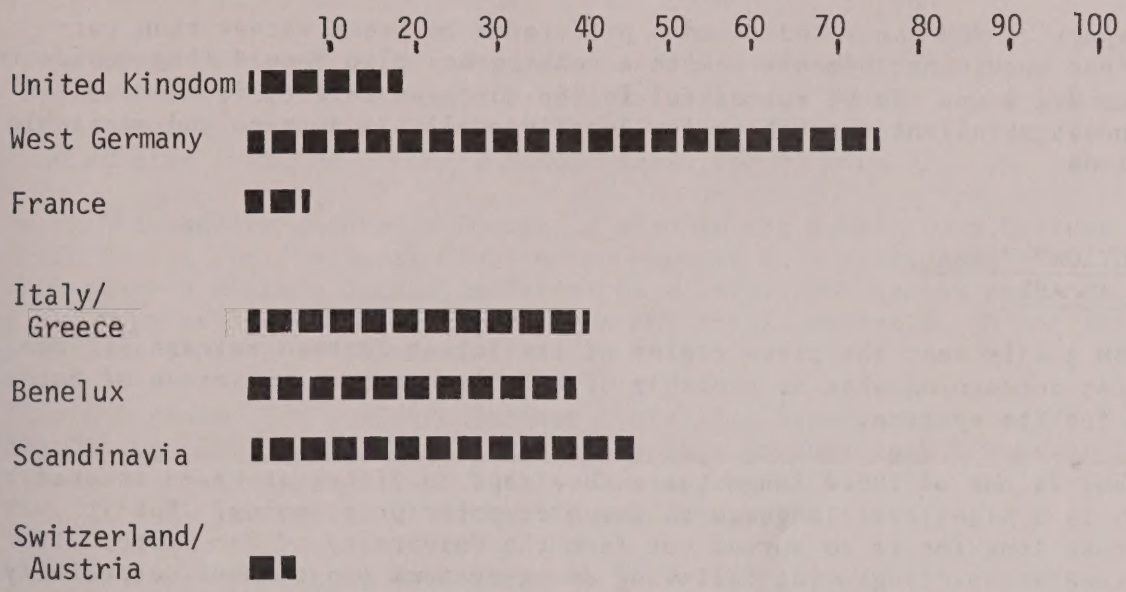


EUROPEAN IBM USERS WILLING TO CONSIDER COMPETITIVE CPUS
1976 - 1979



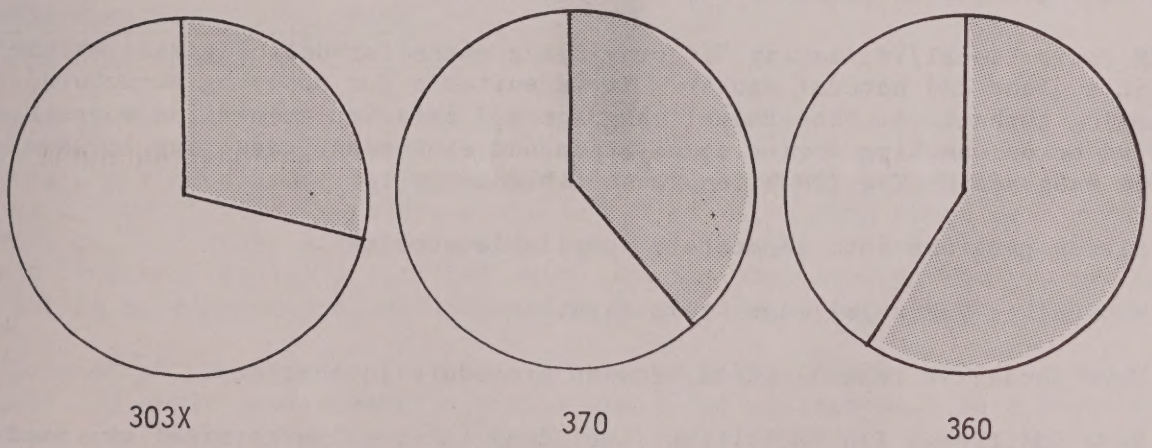
Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

PERCENTAGE OF IBM USERS WILLING TO CONSIDER COMPETITIVE CPUS IN 1979



Siemens is the prime candidate for consideration in West Germany. Generally responses in each country indicated favoritism for a national supplier, such as ICL, Cii Honeywell Bull, Siemens.

PERCENTAGE OF IBM INSTALLED BASE
CONSIDERING SWITCHING TO COMPETITIVE CPU



Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

From interviews with over 200 users, IDC Europe concluded that the portion of the 370 base most loyal to IBM consists of 115 through 138 and 148, although 38% of these users will consider a change. By contrast, the portion of 168 users that will consider a different supplier is 83%.

Prospective PCM users indicated a preference to lease rather than purchase, thus providing themselves with a contingency plan should they decide to revert to Big Blue. To be successful in the European market, it seems a vendor needs excellent reputation for locally available service and available lease plans.

IBM SANCTIONS PASCAL, AS WELL AS APL

While IBM gladly sent the press copies of its latest Fortran release, it was more quiet concerning what is probably of more importance: releases of Pascal and APL for its systems.

Pascal is one of those languages with a rags to riches story -- created by N. Wirth as a high-level language to teach computer programming. But it didn't take long for it to spread out from the University of San Diego. It soon gained a rapidly growing following among systems programmers, especially those writing code for the chip-based systems. The wonder of Pascal is that while many people espouse structured programming, Pascal embodies structured programming, indeed forces those using Pascal to follow some basic steps that constitute structured programming, thus making later changes and updates easier as well making the initial construction more clearly outlined.

Needless to say, IBM is not the first vendor to offer Pascal compilers -- but it is IBM, and thus its impact is not to be underestimated. In essence IBM may be giving brave souls the tools they may need to construct their own systems programs.

IBM's Pascal/VS is a compiler for a superset of the Pascal language, operating under OS/VS and VM/CMS. IBM's version supports proposed International Standards Organization standard and includes extensions.

IBM touts Pascal/VS, saying "it provides a means for defining data structures in a clear and natural manner. It is suitable for applying structured programming techniques. The Pascal language and this implementation support extensive error checking during compilation and execution, resulting in more reliable programs." The IBM extensions enable users to:

- Divide programs into separately compilable sections.
- Manipulate variable length text data.
- Have localized reusable data between procedure invocations.
- Have additional I/O facilities, including interactive terminal oriented I/O.

Indeed, EDP/IR suspects IBM has been an active user of Pascal for its in-house software development. The Pascal/VS is available for $235/mo.

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

A random sampling of EDP/IR's mailbox indicates Pascal has been on vendors' minds. Two minimakers, Prime and Data General, have released Pascal. DG enhanced its MP/Pascal for multitasking operations for its MP/OS operating system on both the Micronova and Nova 4 lines as well as for the Advanced Operating System (AOS) on its Eclipse line. DG charges $2,000.

Prime Computer unveiled an enhanced version of Pascal for all its systems that offers global and local optimization as well as a Source Level Debugger that lets users interactively control Pascal program execution during debugging and program testing. Prime's Pascal sells for $4,000.

Among the smaller machines, Pascal is also in the news. Onyx Systems offers UCSD Pascal for its Model C8001 microcomputer at a charge of $400. And then there's Western Digital's Pascal on a chip. For system developers, AMI's Amix operating system adds Pascal to the Intel, Motorola, TI and Tektronix microprocessor development systems.

In other areas, IBM's VS/APL Release 4 provides support for the MVS Time Sharing Option (TSO) environment and there's also an auxiliary processor that interfaces to the Graphical Data Display Manager under CICS/VS, VM/370 CMS, and TSO. VS/APL leases for $242/mo with a $33/mo support charge.

The Fortran that got so much press is VS Fortran Release 1; it supports the new Ansi and ISO standards for Fortran and also has enhancements to improve its usability. It includes and extends most of the features of the current IBM OS and DOS Fortran products, according to IBM.

Some of the features include: optimization options similar to those of Fortran H Extended; access to data stored in VSAM entry sequenced data sets and relative record data sets; VSE/VSAM space management for SAM files, which is requested via JCL.

IBM says this version of Fortran facilitates structured programming via an INCLUDE statement that can be nested, allowing source code blocks to be inserted from a library into a program at compile time. IBM's VS Fortran compiler and library leases for $185/mo with support $15/mo.

MAINFRAMERS FIND UPHILL CLIMB TO INCREASE EARNINGS GROWTH RATES

Looking at the six-month results for the mainframers, one is tempted to question whether the glass is half full or half empty. Both pessimists and optimists can find supporting arguments from various facts pulled together for perusal. EDP/IR sides with the cautious optimists, noting there were a number of factors that threw glitches under the wheels of the steamrollers. But it cannot deny that it looks like inflation and its partner-in-crime, recession, are making an elusive goal of increasing earnings as a percentage of revenues.

Looking at the overall pattern, it is clear that companies had trouble maintaining their profit margins during the first six months. As a percent of revenues, earnings have slipped at all the companies except Sperry Rand compared with previous first half-year results.

As a group, the five mainframers excluding IBM showed a 2% rise in earnings and a 16% gain in revenues compared with the first six months of

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

1979. In previous similar periods, the gain in earnings from one period to the next exceeded that of revenues.

However, adding IBM's 8% gain in earnings brings the entire group's earnings gain up to 7% with a 14% gain in revenues. The results examined here include Honeywell and Sperry Rand corporate figures; CDC's are for its computer business.

Whereas normally the percentage gain in earnings is somewhat related to the gain in revenues, during the first six months of this year all three of the mainframers that show a decline in the earnings growth rate experienced relatively hefty revenue growth. Although makers have been slapping additional fees on rental and maintenance to attempt to keep up with the cost of money and labor, obviously the vendors have not felt the full benefit of these moves. Perhaps by yearend these will be apparent.

The industry seems to have experienced more than its share of glitches, such as Burroughs' strike and production difficulties with its 900 Series and new modular terminals. There were "production shortfalls" at NCR. One of the major factors with which vendors have had to contend is the shortage or uneven supply of some key components. Semiconductor component prices became more susceptible to supply and demand than to the industry learning curve, with the result that prices did not decline as had been expected.

Thus computer manufacturers, like the rest of the world, are not immune to manufacturing trials and tribulations.

Of course, the ratio between products being procured by lease and by purchase played a significant role in the size of the earnings digit. For instance, IBM cited an increased trend toward purchase (small wonder as it enticed users via several schemes) when it announced its 14% gain for the June quarter, its sharpest jump since the fourth quarter of 1978, while Burroughs mentioned a move toward lease when it unveiled its first quarterly earnings decline since 1963.

Looking at the six-month picture, however, IBM cited an 8% gain in earnings. During the second quarter, revenues from purchases were 15% higher than the first quarter. But the makers don't see themselves in any type of black hole. On the contrary, many are talking about improved results during the rest of the year. NCR indicated it increased output of several products which had experienced production shortfalls in the first quarter. It has also begun several cost-reduction programs, although it will expand its R&D expenditures. NCR recently revealed plans for expanding its semiconductor production.

Burroughs showed only a 2% decline and is expecting earnings for 1980 will exceed those of 1979. Honeywell had its problems also, with a 14% decline in the six months, although its second quarter results were "somewhat better than we had anticipated earlier," according to Ed Spencer, chairman and chief executive officer. The company's European affiliate Cii Honeywell Bull was the principal reason for lower first quarter earnings but improved sharply in the second quarter. Spencer noted that profit margins were adversely affected by inflationary cost increases, product-mix changes and increased research and development expenditures. Although order rates have declined in some areas of Honeywell's business, orders in the computer sector were higher for the 1980 half than in the same 1979 period.

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

MAINFRAMERS' SIX MONTH RESULTS PERIOD ENDED JUNE 30
$ MILLIONS

	1980	Δ	1979	Δ	1978	Δ	1977
Burroughs Earnings	109	-2	111	22	91	17	78
Revenue	1,409	10	1,277	16	1,099	15	957
NCR Earnings	82	-8	89	25	71*	42	50
Revenue	1,446	11	1,308	17	1,119*	8	1,040
Honeywell Earnings	104	-14	121	52	79	31	61
Revenue	2,312	18	1,958	19	1,650	21	1,368
Sperry Rand Earn.	151	22	124	18	105	23	85
Revenue	2,658	17	2,276	11	2,043	19	1,725
CDC Earnings	44	25	36	113	17	97	8
Revenue	1,317	28	1,028	21	850	20	708
Non-IBM Earnings	490	2	481	33	363	29	282
Revenue	9,141	16	7,847	16	6,761	17	5,798
IBM Earnings	1,445	8	1,334	4	1,280	4	1,232
Revenue	11,929	12	10,650	14	9,353	10	8,509
Mainframers' Earn.	1,935	7	1,815	10	1,643	9	1,514
Revenue	21,070	14	18,497	15	16,114	13	14,307

MAINFRAMERS' RESULTS
THREE MONTHS ENDED JUNE 30

	1980	Δ	1979	Δ	1978	Δ	1977
Burroughs Earnings	61	-12	69	20	58	16	50
Revenue	735	7	689	16	594	15	515
NCR Earnings	57	-4	59	24	48*	41	34
Revenue	788	10	718	17	614*	7	576
Honeywell Earnings	57	-7	61	39	44	49	30
Revenue	1,181	19	991	15	861	22	705
Sperry Rand Earn.	63	17	54	20	45	20	38
Revenue	1,273	17	1,090	12	973	18	828
CDC Earnings	24	0	24	93	12	154	5
Revenue	688	28	536	19	449	21	370
IBM Earnings	764	14	668	-3	691	5	658
Revenue	6,181	15	5,355	9	4,921	11	4,419

*Excludes $110 million NCR realized from sale of Appleton Papers; NCR posted earnings of $181 million in the six months and $158 million in the second quarter. Revenues are for continuing operations.

Sperry Rand and Honeywell figures are for the entire corporations; CDC's are for its computer operations. Sperry Rand's six month results include the firm's fourth quarter of the preceding fiscal year and first fiscal quarter.

Percentages are calculated prior to rounding.

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

• IBM CONSOLIDATES MANUFACTURING operations of both General Systems Division (GSD) and Office Products Division into the new Information Systems Division, also part of the General Business Group. The new division has responsibility for U.S. manufacturing and worldwide product planning; international manufacturing remains under General Business Group International. Thus GSD and OPD are left to concentrate on marketing and servicing. The move has been in the works for some time. There is a common manufacturing facility in Texas, and several engineers from OPD in New Jersey have been transferred to cowboy boot territory over the past few years.

Plainly, GSD was doing too good a job in the office arena, and OPD's products were beginning to resemble the complexity of GSD products. The Displaywriter has in it Intel's 16-bit CPU chip, for instance, and OPD salespeople are pointing to DP functions down the road for that machine. Some interpret the move as a signal IBM is confident of the outcome of the U.S. vs. IBM antitrust case. Chairman Frank T. Cary commented the move gives the company increased ability to provide its GSD and OPD customers with the best possible products. IBM didn't divulge plans to cross-train sales and field service personnel, but that would seem to be a logical move at some point.

• BUILT IT OURSELVES is what Amdahl is expected to say when it announces its 3705 compatible front end device. Remember when Amdahl wanted to buy Comten, which makes front ends, and then Memorex, which also makes front ends? After those acquisition moves failed, it turned to internal resources to develop the product. IDC estimates there were almost 14,000 communications processors installed in the U.S. in December 1978, of which 3,250 were IBM and Memorex 3705 types. Comten, CCI, and others offer more functions than the 3705s. Amdahl has reportedly indicated it has a prototype of its answer to IBM's as-yet-unannounced H up and running. The question is: does this prototype run Fujitsu's operating system, which a Fujitsu SE opined would be what Amdahl would need to counter H.

• INFLATION TIME AGAIN -- or keeping up with the Joneses. Honeywell levied a 5% to 10% increase on monthly lease/rental and maintenance services effective August 1 for new business and October 1 on existing contracts. Those items getting 5% raises were older peripherals, CPUs and memories for the Level 62, 64 and Series 60s as well as the older Datanet front ends. Prices go up 10% on selected peripherals for all the above-mentioned systems as well as on lease/rental charges for add-on memories for the DPS 8. Application software as well as education and training are also raised 10%. CDC last May effected a 4% average raise, although Cyber CPU lease prices rose 10% with peripherals leases also up 10%. Memory purchase prices dropped.

• TRUE TO THE LEARNING CURVE famous in semiconductor land, Intel has dropped prices of its 8-bit 8088 by about 60% to $31.90 each in lots of 100. The 8088, introduced in 1979, was designed to be the higher performance, lower cost successor to the 8080A and 8085A.

• DATA GENERAL EXPANDS COMMERCIAL systems family with the CS/10 single-station, four-terminal system costing about $11K and the CS/70 with prices starting at $40K that can support up to 17 terminals and 760M bytes disk. Both run DG's interactive version of Cobol, in contrast to the recent variations that run Basic.

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

EDP industry report

• THE INTERNATIONAL DATA CORPORATION'S NEWSLETTER FOR EXECUTIVES CONCERNED WITH THE ELECTRONIC DATA PROCESSING INDUSTRY

"THE GRAY SHEET" JULY 28, 1980 • VOL.16,NO.6 P.J. McGOVERN,PUBLISHER

Videodisk Makers Line Up -- Page 5

DEMAND FOR TERMINALS BOOMS; USERS' APPETITES INSATIABLE

What do peanuts, potato chips, and terminals have in common? They have a propensity to stimulate demand once someone has tried one. Users apparently have a voracious appetite for terminals. IDC projects shipments in the terminal and data entry device market will grow from the 1979 rate of nearly $2.7 billion to about $4.5 billion in 1984, thanks to a 9% annual growth rate. Because of the fast-growing nature of the business, the installed base by 1984 should swell to over 7.7 million devices, representing a 21%/year growth in installed base.

Looking at the estimated percentage of users' EDP budget allocation for data entry/terminal equipment, IDC sees a wide variety, according to the nature of the business. For instance, the retail industry ranks first with about 25% of its budget assigned for terminals, whereas construction ranks last out of 21 industries with less than 2% of its EDP budget for terminals.

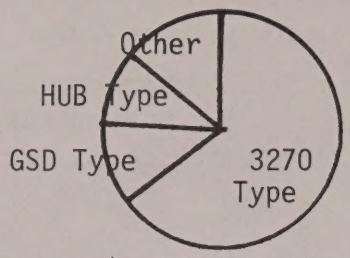
From a survey of over 1,000 sites, IDC spotlighted several industries that portend to be candidates for terminal acquisitions. Among those looking to expand and/or upgrade their terminal capabilities, agriculture, construction, and communications industries rank high. In terms of replacements, the construction, miscellaneous services, manufacturing, utilities, savings and loan, and services industries are among the prospects.

The terminal/data entry market includes, among others: editing and conversational CRTs and keyboard/printers, clustered and single station processors, key-to-disk, remote batch, and OCR. The growth rate of the editing terminal sector, which includes those with some intelligence built in, is expected to outpace that of the conversational CRT market. Shipments of editing CRTs in 1984 will nearly double those in 1979 in both dollars and units. The trend is to endow terminals with more features for the same approximate price; thus more terminals are fitting into the editing category.

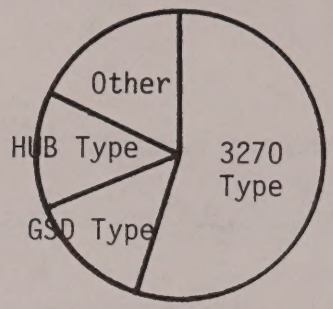
Sectors of the editing terminal market include the IBM 3270-type market, the market for Honeywell, Univac, and Burroughs (HUB) terminals, as well as CRTs of the IBM General Systems Division ilk and "others."

EDP Industry Report is published in annual volumes of twenty-four issues each by International Data Corporation, Post Office Box 915, 214 Third Avenue, Waltham, MA 02254. Entire contents © 1980 by International Data Corporation. **Director,** James Peacock; **Editor,** Molly Upton; **Census Editors,** Paul Arabasz, Lloyd Cohen; **Contributing Editors,** Dave Dillman, John Gantz, Peggy Eisen, Nancy Scull, Carol Weiszmann; **Circulation Manager,** Mary M. Trayte. Patrick J. McGovern, Chairman, International Data Group, John P. Breyer, President, International Data Corporation. Editorial ideas and information are researched and formulated by the editorial staff. Information and opinions in each issue are based on the best information available, but their accuracy and completeness cannot be guaranteed. **Subscriptions:** One year, $195; three years, $475. Single copies priced as indicated on inside pages. Prices for multiple copies on request. Reproduction without written permission is completely forbidden. Telex 92-3401; Telephone **617/890-3700.**

EDITING CRTS - ESTIMATED VALUE SHIPPED



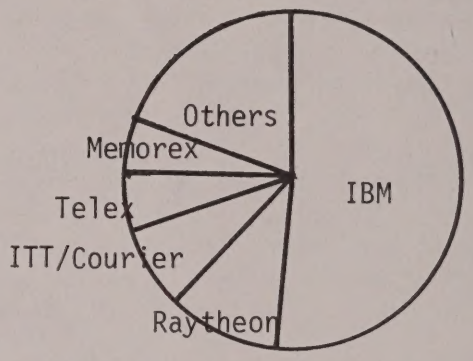
$1,043 Million
1979



$2,047.5 Million
1984

One of the larger sectors of terminal shipments is the IBM 3270-type, which grew at a faster rate in 1979 than IDC expected because IBM doubled its production rate. IBM last year managed to reduce the rate of decline in its portion of the 3270 market. But user demand had exceeded IBM's capacity, and independents managed to garner a fair share of the shipments with their versions. IBM's market share in the overall terminal and data entry device market has been shrinking, but the IDC survey of users found that IBM is the dominant supplier with an average of 34% of respondents' terminals, followed by DEC and NCR with an average of 9% and 6%, respectively.

EDITING CRTS - IBM 3270-TYPE INSTALLED U.S. MARKET SHARES



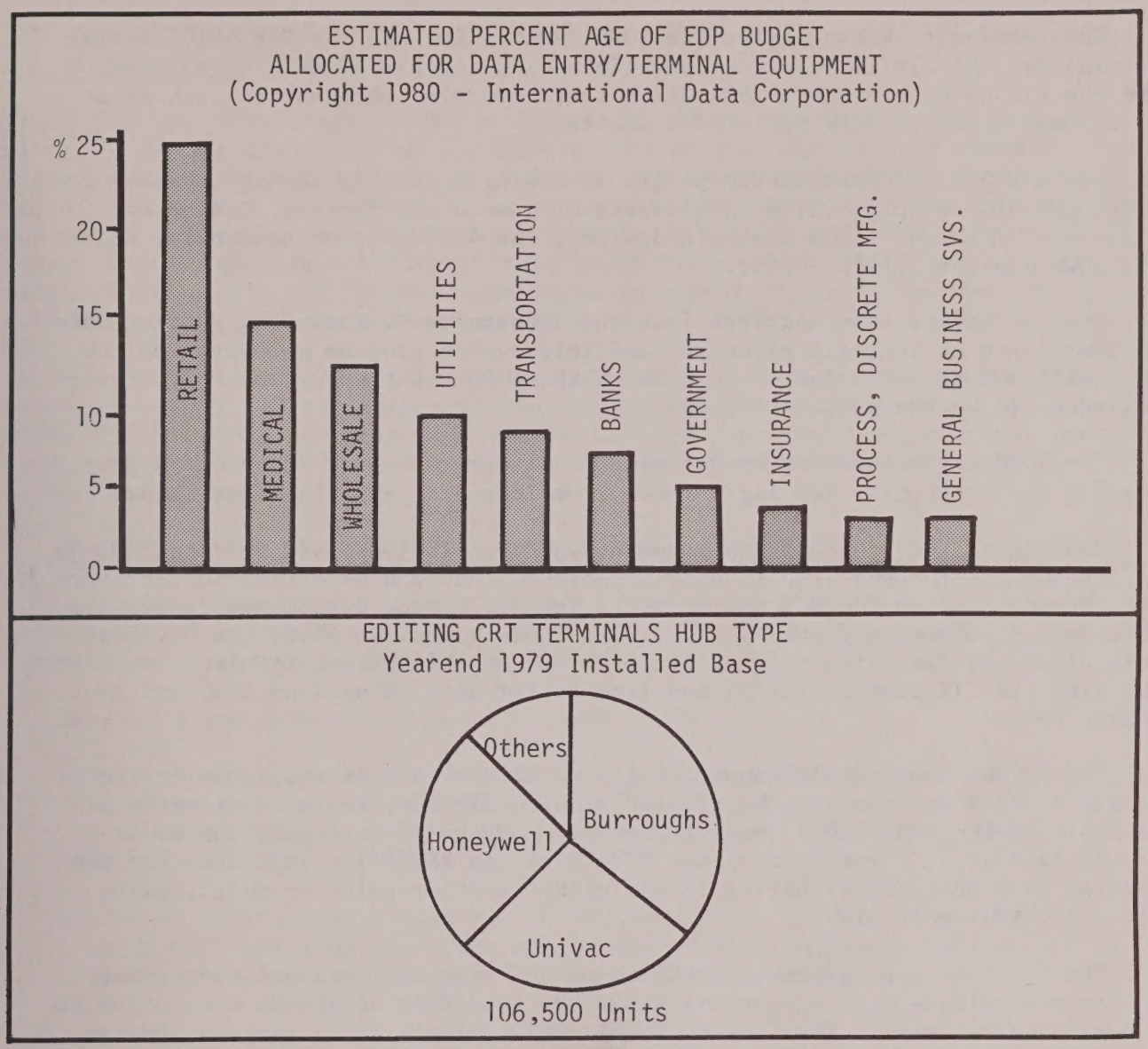
720,000 Units
1979

In this year's report on the terminal market, IDC breaks out the market sector for editing terminals used with Honeywell, Univac, and Burroughs systems, and notes that it expects this market to boom, reflecting the passion for more terminals per system. During 1979, the installed base of these terminals grew 49% to 106,500 devices. The dollar value of shipments of HUB devices in 1984 should reach $258 million or 1.4 times that of 1979. Other players include ADDS, ITT/Courier, Racal-Milgo, TEC, Teleray, and Raytheon.

The table below ranks the populations of terminals by vendor, according to the IDC survey.

Honeywell	Univac	Burroughs
Insurance	Membership Organizations	Commercial & Savings Banks
Transportation	Transportation	Savings, Loan Assoc., Credit Unions
Process Manufacturing	Government	Government

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**



Some trends in the industry promoting additional terminals include:

- Users are increasing the number of terminals in use on their systems and plan to continue this trend.
- Distributed processing and office automation are increasing the demand for terminals and DP shops are finding they relieve demands for their time by providing terminals to users.
- The rush to improve productivity should also contribute to the growth of the terminal market.

Univac's new family

Univac unveiled its new family of UTS 4000 terminals, which range in capability from a TTY-type to a cluster controller, as well as unbundled terminal software and maintenance, and a central site maintenance program. The Univac offerings comprise an upgraded offering in the distributed processing market. They replace the UTS 100/200 terminal line and in some instances the UTS 400.

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

The terminals, known as the UTS 4000 family, include the UTS 4020 Cluster Controller, the UTS 10 Teletype-compatible display, UTS 20 editing display, and the UTS 40 user programmable CRT. There are also peripherals such as an 80-column impact printer and a 1M diskette.

The UTS 40 is competitively priced as a single station device, whereas the older UTS 400 is competitive in clusters of two to six devices, Univac explained. If a user needs over six devices, the 4020 cluster controller and UTS 20Ws are the firm's answer.

One can deduce some upgrades from the announcement, including putting more software such as the edit processor and interactive program generator on the 40 itself and allowing the 40 to hook to the 4020. Currently the only terminal accepted by the 4020 is the 20.

The 4020 is intended to handle some local processing in distributed processing applications. Its logic comes from Z80s and 2901 bit slice chips.

Looking at the range of announcements, Univac followed IBM and its 3101 by announcing a TTY-compatible conversational CRT that can be either buffered or unbuffered. Called the UTS 10, it sells for $1,360 and $1,560 and is available on a purchase-only basis. The IBM unit is priced at $1,295 to $1,520. Both offerings are definitely in the high end of this market. Univac says the 10, with its TTY compatibility, can link to IBM nets as well as X.25 and also Univac nets.

The 20 has some intelligence locally -- Z80s -- and is available in the single station version and the cluster station UTS 20W, which is directly attachable to the UTS 4020 cluster controller. Up to 12 terminals can be attached locally. In remote use, the UTS 20 has an RS232/V24 interface for connection to a host; line sharing is via either multidropping or multiplexing via a terminal multiplexer.

The 40 is user programmable with up to 64K bytes of optional user memory. It can communicate with a host via RS232/V24 interface or direct connection to a host's multiplexer. Versions of Cobol are available for a range of Univac hosts, including the 80, 90 and 1100 at monthly rental from $32 to $105, respectively. Taking a page from Hewlett-Packard and TI, there are program cartridges that plug into the back of the single station 20 and 40, endowing the unit with capabilities such as screen bypass or system updates.

Software on the 4020 includes the System Control Program which takes the first 64K or 128K of memory, the Edit Processor, and Interactive Program Generator. These can be used to develop Cobol programs for execution on either the UTS 4020 or UTS 40. The IPG is described as a highly tutorial system that prompts users through the definition of applications.

As a sign of the times, Univac is offering customer set-up as an alternative to installation by Univac customer engineers. In addition, the Central Repair Service will be inaugurated; the initial location will be Salt Lake City. It will handle all 10s. Users of 20s may select either on-site maintenance ($25/mo) or central repair ($120/yr). Univac doubled the discount on terminals; the 20 carries a 10% discount on between 25 and 49 units whereas the Uniscope offers a 5% discount. IBM recently lowered purchase prices on its older 3270s and instituted volume discounts on others (EDP/IR, July 16).

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

PARTICIPANTS LINE UP ALLIES FOR VIDEODISK SWEEPSTAKES

While the search for high capacity, high performance mass storage devices is being led by IBM with its 3380, videodisks may eventually have the largest capacity at the least cost per bit. Technology is currently probing the problem of how to make the devices erasable so that one can write after reading, and to get acceptable bit error rates, but these undoubtedly will come in time. Even if data is not alterable on these disks, they could be used for archival purposes. EDP/IR sees videodisks in various forms being used eventually both in DP environs and within the home.

Currently videodisks are generally associated with only two markets: the home and industry, where they are used as sales and training devices. In both cases the devices play prerecorded material. The industrial players can provide random access to indexed frames and can be connected to a computer for sophisticated control.

The big news in the videodisk arena is the associations of large companies spanning the globe gearing up for a piece of the action. There are different technologies, indicating incompatibilities, and different markets -- the home and industrial and data processing environs. It's the latter application that has problems with the current bit error rates.

There are two technologies used in videodisks:

- Electrical capacitance pickup of binary coded information either by a stylus from grooved disks, or by a "sled" on ungrooved disks. (A problem with capacitance systems is that they are more susceptible to wear.)

- Lasers used to read binary coded information -- usually in the form of laser-burnt pits -- in either a reflective or transmissive mode. These are referred to here as optical memories.

Players

Many of the players are orienting their products towards the home and/or DP-type use. EDP/IR believes that eventually the distinction between the products will not exist; a videodisk in the home will be used to store data retrieved from an information service. Those targeting DP markets are listed first. Many of these products are not in production yet.

- Drexler Technology recently introduced Drexon D-1201, an optical memory disk that the company says is the first commercially available laser recording device with direct-read-after-write (DRAW) capabilities. Drexler claims that by 1982 production versions of its two-sided 12-inch disk, manufactured in quantities of 100,000 or more, will be capable of storing 2.5 billion bytes on each side, at a cost of about 2 cents a megabyte. For comparision, Drexler estimates that conventional magnetic disks cost $3.00 per megabyte. Drexler is looking at office applications.

But the problem is that the market does not abound with players that boast the DRAW capability. Drexler said Toshiba demonstrated one recently in Germany that might be available near yearend.

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

• Philips is working on a device that is supposed to be nearing the random access and recording times of today's magnetic disks. Disk capacity, Philips says, is nearing 10 billion bits per 30-centimeter disk.

• Xerox and Thomson-CSF have an agreement to develop and produce optical storage disk equipment. Xerox is bringing its knowledge of optical memory players into the agreement, while Thomson-CSF will provide its development work on optical disks. The joint effort will eventually lead to a write/read optical storage system that will be geared to DP and office systems.

• Magnavox, NV Philips' wholly owned subsidiary, manufactures and markets Magnavision, currently one of the few home entertainment videodisk players available. The system, developed by Philips and MCA, a California entertainment conglomerate, operates at 1,800 rpm, with a disk capacity of one hour (with a two-hour option that works by decreasing disk speed), all for $775. The system is laser based.

• Discovision Associates, a company owned jointly by IBM and MCA, provides disks used by the Magnavision and Universal Pioneer systems.

• Universal Pioneer, a company half owned by Discovision Associates and Pioneer Electronic Corp. (meaning IBM has a 25% interest in it), makes the 7280, a product geared toward industry as a sales and training aid, and currently the only other videodisk player available. GM uses 11,000 units.

Universal Pioneer now manufactures a player for the home which sells for about $26 less than Magnavision's product. It also uses Discovision's disks and is compatible with Magnavision. It's not clear exactly what IBM's role in all this will be. However, one theory is that it eventually will link the use of videodisks to home information services.

• RCA will soon offer "SelectaVision" which, though of a different technical ilk, will eventually create direct competition on the home front for Magnavision and Universal Pioneer's product. RCA also recently made arrangements with Zenith to swap RCA's technical know-how for Zenith's experienced marketing skills. RCA will be making disks and players for Zenith by mid-1981, and Zenith will produce its own by early 1982. CBS and MGM are aligned to produce programming for the RCA system.

RCA's system uses a stylus pick-up that reads capacitance in grooves on a floppy disk revolving at 450 rpm, containing up to one hour of programming per side. Capacity is about 1,000M bits. RCA/Zenith is not compatible with either of the other mentioned technologies.

From the development arena, C.W. Reno of RCA's Advanced Technology Laboratories says that future developments will potentially lower the price of these high capacity disks to around $10. However, the drives will probably be more expensive than those available today. Government and other corporations in need of large archival or file storage are potential users.

Interestingly, Reno claims that optical memory disks of the future will not be limited to permanent storage use. Disk coatings other than tellirium (which is widely used today) will bring about an erasable optical memory media that will be comparable to access times of today's magnetic disks, he said. RCA's bit error rate goal is 1 in 10 million, and eventually 1 in 10 billion.

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

VIDEODISK ENTRANTS

Laser Systems

IBM
MCA
North American Philips
Pioneer Electronic
Philips (drives, disks)
    Magnavox (drives)
    Discovision Associates (disks)
    Universal Pioneer (drive)
    MCA Discovision (program material)
    Optical Programming Associates (program material)

Drexler Technology (disks)

Grooveless Capacitance Systems

Matsushita Electric (disks, drives)
Victor Co. of Japan
General Electric
Thorn EMI (disks, drives, program material)
    Various unnamed companies for disks, drives, and program materials

Grooved Capacitance Systems

RCA (disks, drives, program materials)
Zenith Radio (drives)
    MGM/CBS Home Video
Beta & Taurus Film (program materials)

Note: all but Drexler are allied with the others within a grouping.

• Matsushita, parent of Panasonic and Quasar brands, hopes to be exporting its videodisk player to the U.S. by next year. It is now adopting a system developed by 51% owned Victor Co. of Japan (JVC), and this system, though a capacitant reader, does not use a grooved disk and is reportedly not compatible with RCA's technology. General Electric is aligned with Matsushita.

But how big is the market?

The RCA/Zenith partnership anticipates selling close to 200,000 of its home entertainment videodisk players the first year after introduction. Further, it predicts that future sales will come close to matching those of color television. An RCA executive reported, "We're going after a 30% to 50% saturation (of the market) by the end of 10 years. That's 5 million to 7 million players a year."

Magnavox executives aren't so sure this approximation is correct. They ask, "is this a product for 50% penetration, or for 15% to 20%?" Magnavox is targeting its product toward a more exclusive market.

Sony, on the other hand, has both optical and capacitance systems but does not intend to market either because the market isn't sufficiently lucrative, although it is considering joining with Matsushita Electric.

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

• NCR EXPANDS SEMICONDUCTOR capacity. Plans call for expenditure of $155 million over the next four years to expand three existing facilities. NCR hopes to increase the share of semiconductors produced internally from 40% of NCR's needs today to 60% by 1984.

• CDC FORMALIZES TEAM APPROACH to management by naming Robert Price president and chief operating officer and Norbert Berg deputy chairman. Along with William Norris, they comprise the corporate executive office. The move is seen as putting in place the pieces should Norris, who recently turned 69, decide to step aside. Price has been running the computer operations since 1977; Berg has concentrated on social issues, administration, and personnel.

• HP BEGINS TO UNLEASH ITS 300; TARGETS IBM BASE by endowing models of the 300 with RPG, extensive conversion aids from IBM to HP RPG, and a lot more disk. The new Models 20 and 30 300 RPG/Advanced Function System are touted as multi-user systems in the $40,000 to $80,000 price class. HP also offers conversion aids to woo the System/32 and 34 users. The Model 20 with 100M bytes of removable disk starts at $50,000 while the 30 wih 240M bytes begins at $63,000. Both have a minimum of 256K and the 30's limit is 1M, 492 Mbytes disk, 15 application terminals, two printers and two bisynch lines. HP plans to sell the 20 and 30 via systems houses and offers an introductory deal through August 15. IDC estimates there are about 15,000 System/32s installed worldwide and about 30,000 System/34s.

HP adds disk power to 85. As promised earlier, the 85 in August can attach a 5.25 in. 1.08M byte floppy via an HP-85 read only memory (ROM) that includes 30 additional Basic commands as well as features that allow storage and re- trieval of graphics displayed on the CRT and volume labeling. Prices are $145 for ROM; $1,500 for the first single drive and $2,500 for the first dual drive. Currently the 85 has 217K bytes of cartridge.

• LANIER TYPEWRITERS ASSUME NEW capabilities. With its latest 8-inch floppy disk addition, the No Problem typewriter user can obtain selected formats and data bases, making applications the focal point of the low end of the word processing market as well as of other areas such as the small business computer mart. Lanier users can, for instance, get 40 diskettes containing Spectext, a data base of construction text from Bowne Information Systems, or receive the information on-line to Bowne. A year's subscription to diskettes costs $3,000; selected portions can be obtained for $850 plus $2/page.

• DISTRIBUTORS -- FRIEND OR ---. Apple Computer, Inc., has filed suit charging its international distributor, IT&T Consumer Products Ltd., with copyright infringement. Apple alleges the IT&T unit copied its Disk II Floppy Disk Subsystem, including two boards, firmware, software, and the user's manual, all without permission.

• UP FRONT WITH NAMES. American subsidiaries of Mitsubishi Electric Corp., Tokyo, are assuming Mitsubishi identification. Melcom Business Systems, marketer of the 8000 series computer, has become the business computer division of Mitsubishi Electronics America, Inc. Other divisions include the semiconductor unit and industrial electronics products. Mitsubishi Electronics has dealers for its business system in the western U.S. and plans to move into the east and south soon.

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

EDP industry report

• THE INTERNATIONAL DATA CORPORATION'S NEWSLETTER FOR EXECUTIVES CONCERNED WITH THE ELECTRONIC DATA PROCESSING INDUSTRY

"THE GRAY SHEET" JULY 16, 1980 • VOL.16,NO.5 P.J. McGOVERN,PUBLISHER

IBM Share of Shipments Growing Rapidly

TRADITIONAL MINI MARKET HOLDS OWN BETWEEN MICROS AND SUPERMINIS

After years of being the glamor child and stalwart spearhead of the minicomputer's thrust into broader uses in the computer industry, the traditional minicomputer now finds itself being somewhat eclipsed in growth rates by the other, newer sectors of the market -- the supermini and the micromini.

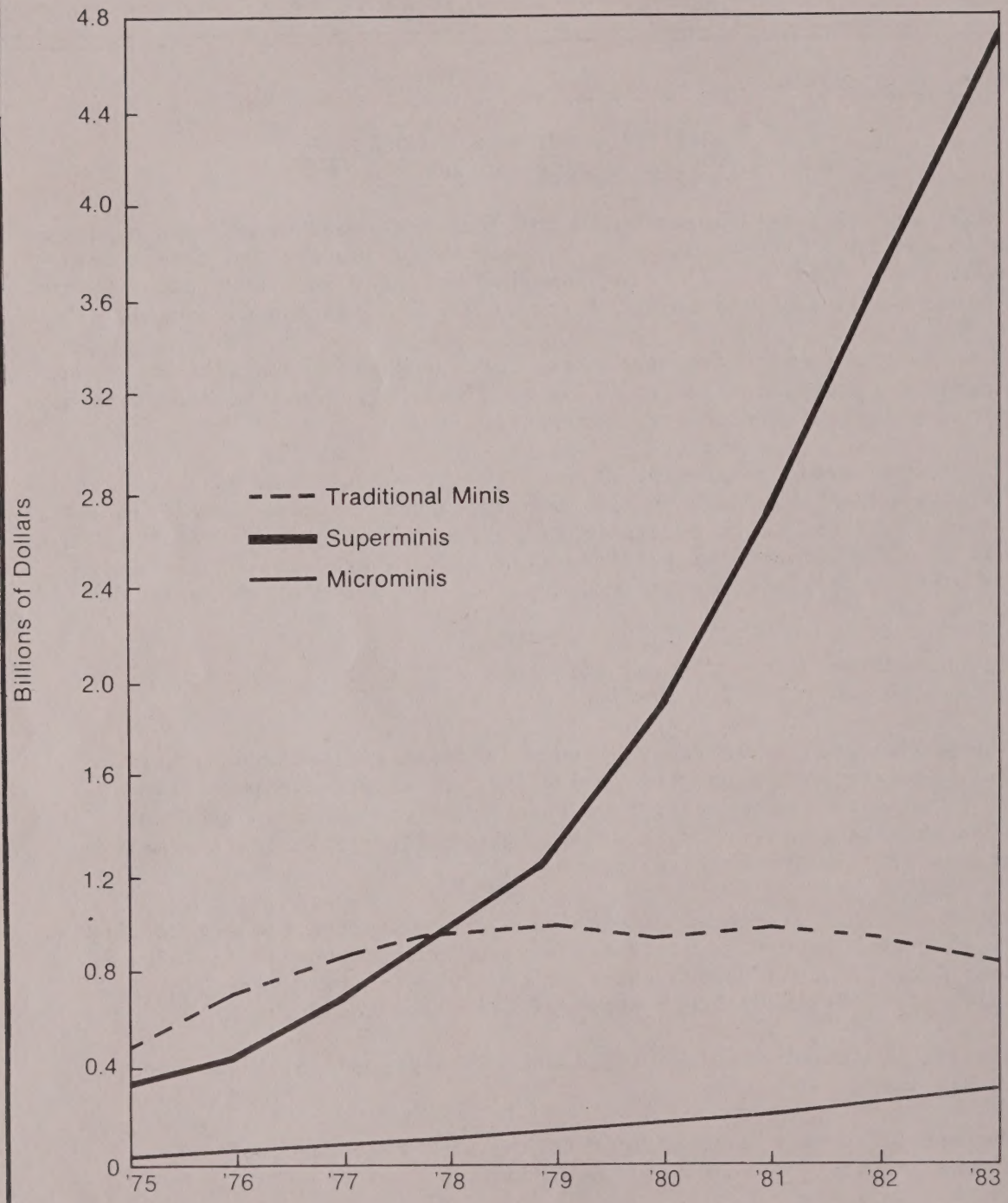
But despite the encroachments on its territory, it looks like the traditional mini is carving a niche ensuring survival, although the boom days of 20% plus annual growth rates are long gone.

The value of traditional mini shipments will account for no less than 22% of all minicomputer shipments by U.S. manufacturers in 1984, down from 44% in 1979. Meanwhile, the value of supermini shipments will reach 74% of all mini shipments in 1984 compared with 52% in 1979. There are several trends emerging within the minicomputer industry, not the least of which is the presence of IBM.

- Revenues of traditional mini shipments will reach $1.59 billion in 1984 compared with $1.1 billion in 1979.
- The growth rate of shipment revenue is dwindling, although there will be a temporary upswing in 1981 when original equipment manufacturers start recovering from the recession. Between 1981 and 1984 the annual growth rate will be about 5%, reflecting the mature status of this industry sector.
- IBM's own 150% growth in mini shipment revenues contributed to the 21.5% growth rate of traditional mini shipment revenues in 1979. Last year IBM held an 18% share of the value of traditional mini shipments. By 1984, IBM's share of revenues should reach 50%.
- Digital Equipment Corp. is the leader in unit and dollar shipments in all three categories.
- The mix of revenue sources is changing as service and software assume growing importance to the industry.

EDP Industry Report is published in annual volumes of twenty-four issues each by International Data Corporation, Post Office Box 915, 214 Third Avenue, Waltham, MA 02254. Entire contents © 1980 by International Data Corporation. **Director,** James Peacock; **Editor,** Molly Upton; **Census Editors,** Paul Arabasz, Lloyd Cohen; **Contributing Editors,** Dave Dillman, John Gantz, Peggy Eisen, Nancy Scull, Carol Weiszmann; **Circulation Manager,** Mary M. Trayte. Patrick J. McGovern, Chairman, International Data Group, John P. Breyer, President, International Data Corporation. Editorial ideas and information are researched and formulated by the editorial staff. Information and opinions in each issue are based on the best information available, but their accuracy and completeness cannot be guaranteed. **Subscriptions:** One year, $195; three years, $475. Single copies priced as indicated on inside pages. Prices for multiple copies on request. Reproduction without written permission is completely forbidden. Telex 92-3401; Telephone **617/890-3700.**

RELATIVE GROWTH OF SUPERMINI, TRADITIONAL MINI AND MICROMINI SYSTEM SHIPMENTS, 1975 - 1983



Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

1979 MINICOMPUTER MARKET ACTIVITY

	$M Revenues			Units Shipped		
	1978 Revenue ($M)	1979 Revenue ($M)	% Share	1978 Units Shipped	1979 Units Shipped	% Share
Digital Equipment	1,420	1,850	38%	47,500	55,000	45%
Hewlett-Packard	535	750	15%	7,450	9,300	8%
Data General	410	540	11%	13,500	15,750	13%
HIS	180	290	6%	2,000	3,100	3%
IBM	80	240	5%	2,800	7,000	6%
Prime	94	153	3%	670	1,030	1%
Perkin-Elmer	113	140	3%	2,100	1,770	1%
Texas Instruments	110	130	3%	6,000	7,380	6%
General Automation	111	113	2%	3,760	4,325	4%
Microdata	76	95	2%	1,500	1,180	1%
Modcomp	65	72	2%	830	500	*
SEL	58	71	2%	360	450	*
Univac	50	68	1%	1,550	1,225	1%
Computer Automation	68	68	1%	6,000	6,550	5%
Tandem	31	66	1%	220	465	*
Harris	43	53	1%	230	235	*
Others	206	201	4%	7,030	6,740	6%
TOTAL	3,650	4,900	100%	103,500	122,000	

*Less than .05%

IDC defines a mini as a tool rather than a solution; available as a complete system; actively marketed to OEMs; sold not leased; and with a basic system in the family that sells for between $2,000 and $25,000.

Microminis are based on LSI technology and are generally available in some version for less than $1,000. They compete primarily with DEC's LSI-11 and PDP-8A. Traditional minis are those generally in the $2,000 to $25,000 basic price range with up to 16-bit words. They compete with DEC's PDP-11/04 through the 11/34.

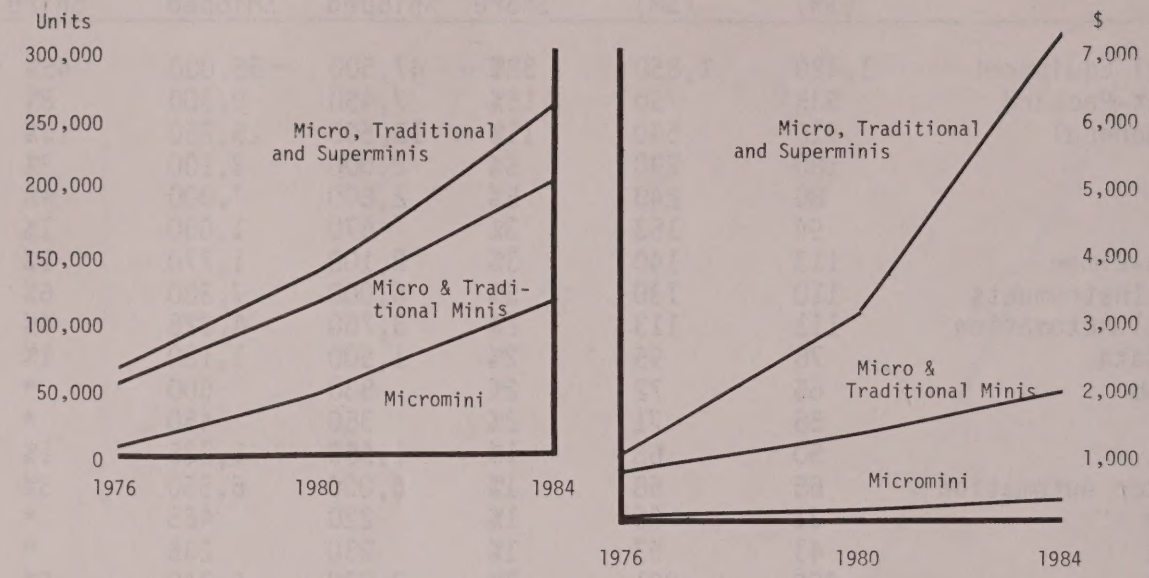
Superminis generally have higher price tags, word size of 16 bits or more, and software that includes an assembler, an operating system, and at least one high level language compiler. They generally compete with DEC's 11/45 through the VAX 11/780.

The micro's impact

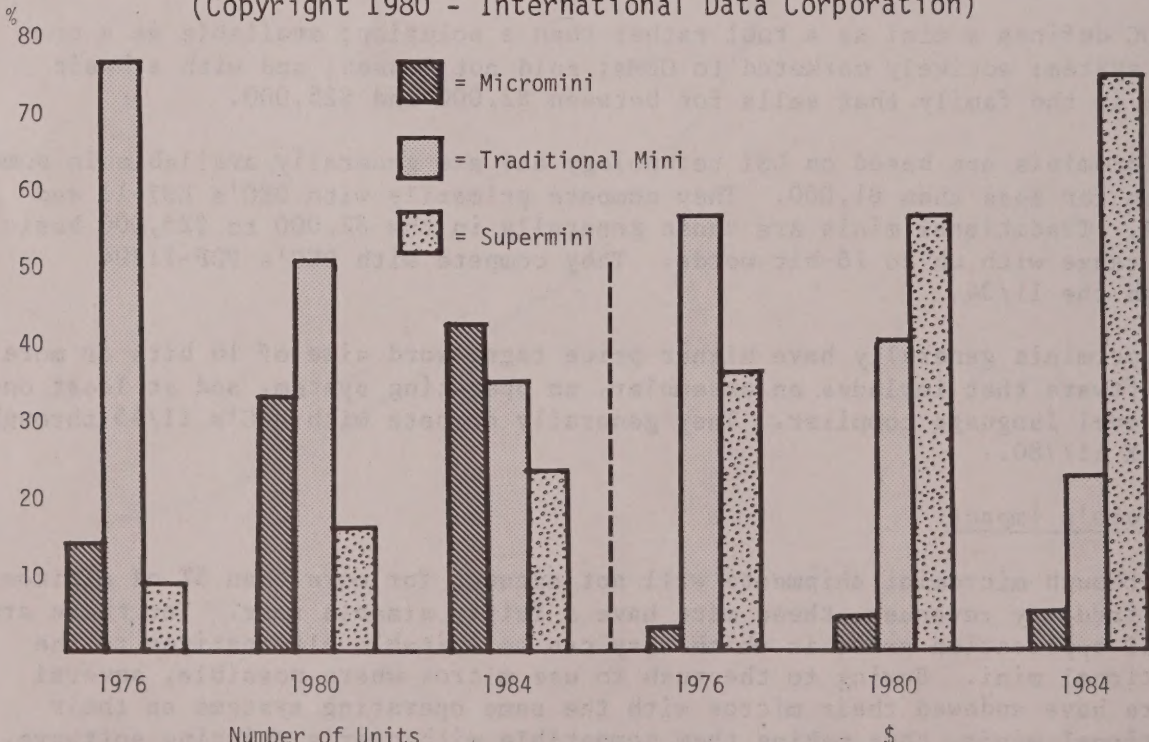
Although micromini shipments will not account for more than 5% of minicomputer industry revenues, these mice have a fairly sizable roar. For there are several application areas in which they can be suitable alternatives to the traditional mini. Bowing to the rush to use micros where possible, several vendors have endowed their micros with the same operating systems as their traditional minis, thus making them compatible with user's existing software. OEM use of micros abounds in areas such as process control.

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

MINICOMPUTER SHIPMENTS OF U.S. MANUFACTURERS
BY SIZE CLASS
(Copyright 1980 - International Data Corporation)

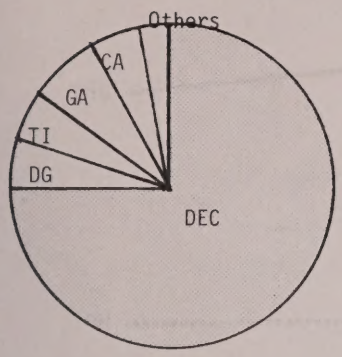


PERCENT OF MINICOMPUTER SHIPMENTS OF U.S. MANUFACTURERS
BY SIZE CLASS
(Copyright 1980 - International Data Corporation)

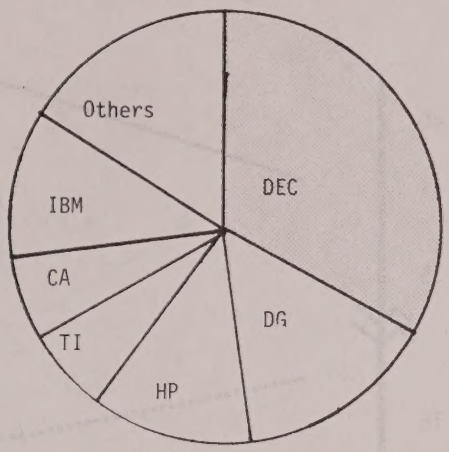


Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

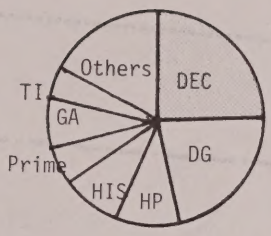
MARKET SHARES OF 1979 MINICOMPUTER SHIPMMENTS (UNITS)
(Copyright 1980 - International Data Corporation)



Micromini
38,500 Units

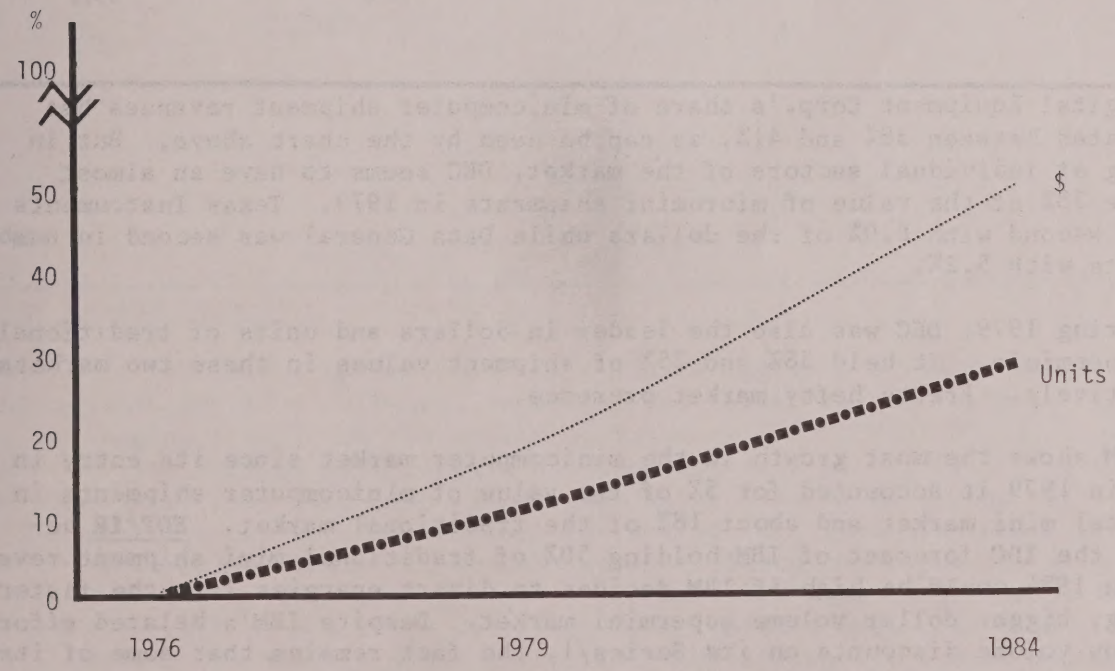


Traditional Mini
66,200 Units

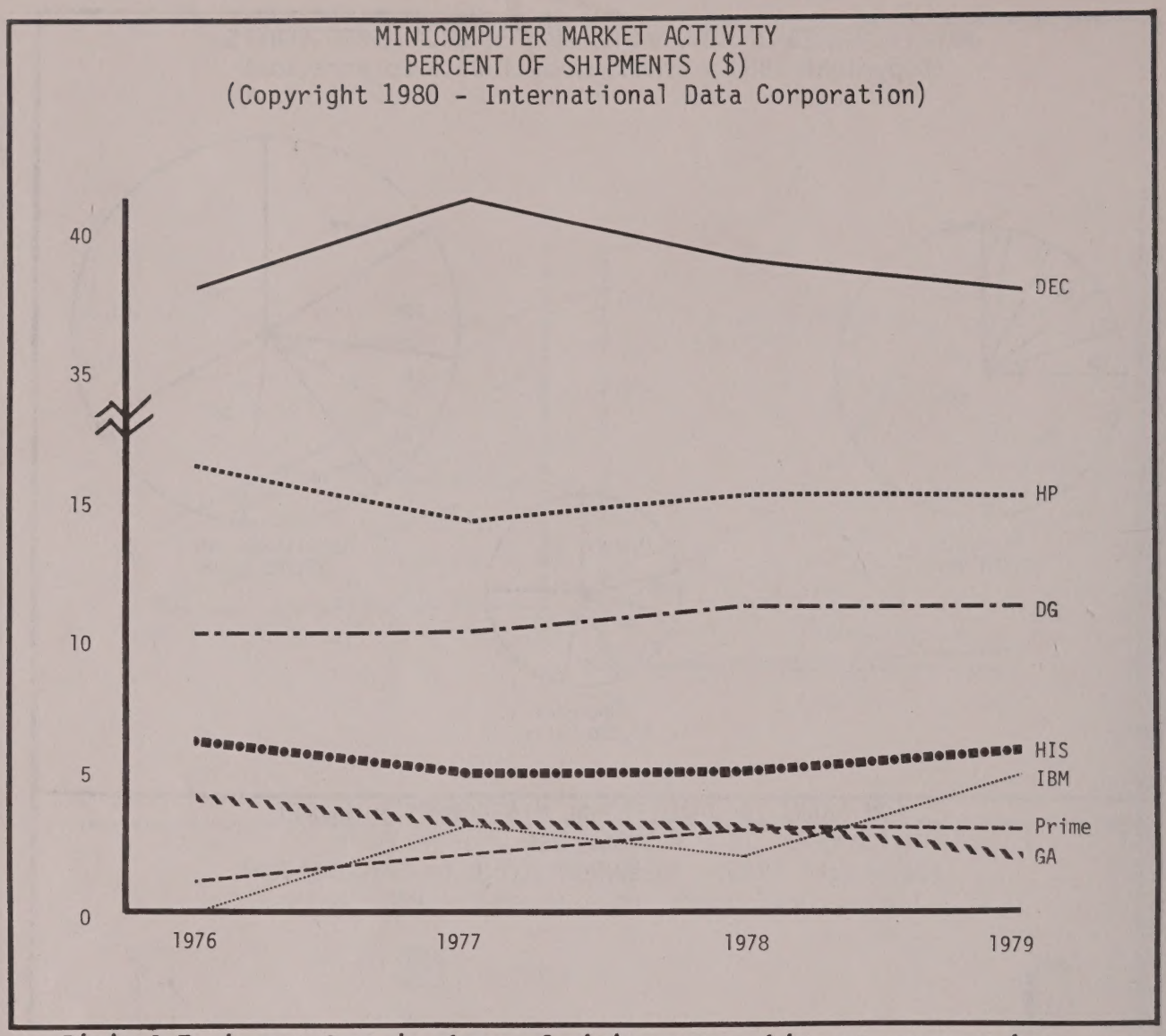


Supermini
17,300 Units

IBM SHARE OF TRADITIONAL MINICOMPUTER MARKET
1976-1984
(Copyright 1980 - International Data Corporation)



Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

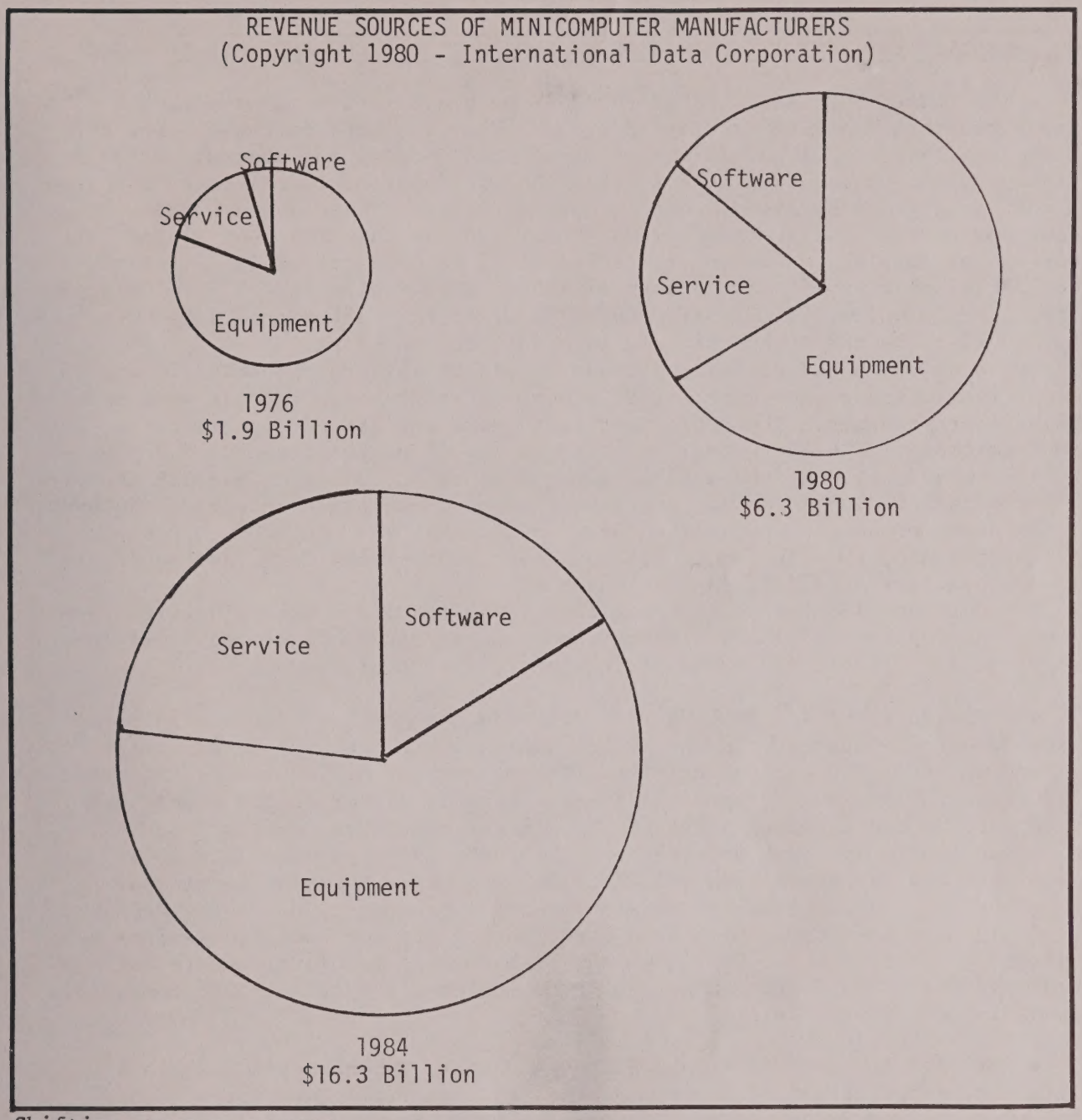


Digital Equipment Corp.'s share of minicomputer shipment revenues has fluctuated between 38% and 41%, as can be seen by the chart above. But in looking at individual sectors of the market, DEC seems to have an almost obscene 78% of the value of micromini shipments in 1979. Texas Instruments ranked second with 8.9% of the dollars while Data General was second in number of units with 5.2%.

During 1979, DEC was also the leader in dollars and units of traditional and superminis. It held 38% and 35% of shipment values in these two markets, respectively. Pretty hefty market presence.

IBM shows the most growth in the minicomputer market since its entry in 1976; in 1979 it accounted for 5% of the value of minicomputer shipments in the total mini market and about 18% of the traditional market. EDP/IR believes the IDC forecast of IBM holding 50% of traditional mini shipment revenues in 1984 could be high if IBM decides to divert energies into the faster growing, bigger dollar volume supermini market. Despite IBM's belated efforts to allow volume discounts on its Series/1, the fact remains that some of its larger sales are looking increasingly like offerings from a systems house, complete with custom software.

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**



Shifting revenue sources

Typical of the minicomputer industry's increasing maturity and users' growing demands for more software, services, and easier to use systems, mini makers are seeing a shift in the source of revenues. By 1984, 39% of revenues should come from service and software, in contrast to a paltry 19% in 1976. At the same time, some intensive efforts are being devoted to making service cost-effective for the supplier through the use of such items as remote diagnostics, service plans that call for the user to return the device to a central depot, or diagnostic capabilities in the machines that enable users to replace boards without a service call. There are also trends toward self-installation and training in other areas, such as terminals and word processors, primarily led by IBM, that are expected to make their way into the world of minicomputers as well.

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

• IBM CLEARS THE DECKS, MAKES PURCHASE more attractive on many items. The announcements are coming fast and furious. They include: purchase price cuts of about 17.6% on 3271 and 72 controllers, 3275 display and controller, 3277 display, 3284, 86 and 88 printers. But the minimum monthly maintenance charge on most products was raised, some as much as 19.6%. There are now volume discounts on some products not included above, such as the 3274 control and 3276 control and display, which in quantities of 25 or more rate a 15% discount. The 3278 display is 15% off in lots of 100 or more, while the 3279 color display, for 100 units, is 10% off. The 3285 printer is 15% off in lots over 25. Could it be that there are new terminals coming along?

DPD and GSD raised rental and lease prices on selected products 5% and 7% respectively, and purchase prices 5%. Monthly maintenance charges were raised 10% on some products. The net effect is to make the lease/purchase ratio favor purchase. The 4300 lease/purchase is now 38 months instead of 40 -- probably what they would have been at the time of introduction had IBM employed its usual pricing formula. There were no purchase price increases whatever on the newer products such as the 3380, 3375 disks, 4331-2, 5280, DPD's possible version of the 8100, most disk and tape subsystems, S/38, and supermarket, manufacturing, and financial systems.

In addition, IBM let it be known that 158-3 and 168-3 are being withdrawn from marketing September 15, although model upgrade and other orders will be accepted as available and normal maintenance support will continue.

• FROM THE FOLKS WHO BROUGHT YOU INTERDATA, we now have Syntrex, a Piscataway, NJ-based enterprise in the office automation arena with workstations costing under $6,000 without printer. The standalone device, called Aquarius, includes a CRT and dual floppies and interfaces to either an IBM electronic typewriter or a daisywheel printer. The larger clustered units are Gemini, which can handle up to 14 workstations, $19,600, and Capricorn, $25,500. Jim Folts, the man who posed with all those Owl and other types of terminals, is marketing VP, and Dan Sinnott, former Interdata president, heads the venture. The Gemini and Capricorn units have dual controllers for backup. Gemini has a password protection while Capricorn has an automatic proofing feature and key word indexing. The Capricorn system communicates via 2780 and 3780 compatible protocols and TWX and Telex.

• ACTIVITY IN SMALL DISK land includes Shugart Technology's 5.25-inch micro-Winchester with 6.38 Mbytes unformatted capacity. The system is the same size as microfloppy units. Prices are $1500 for OEM evaluation with discounts available. In an effort to make this design an industry standard, Shugart Technology has licensed Texas Instruments to manufacture it also. Shugart Technology, not to be confused with Shugart Associates, is Al Shugart's latest venture. Meanwhile, Shugart Associates has obtained a license from Tandon Magnetics Corp. for use of its double-sided head design.

• HP ENHANCES 1000 LINE with the 1000 Performance/45 and C compiler for various 1000s. The Performance/45 is based on the 45 with an F computer, 512K, 19.6 Mbytes disk and a graphics terminal as well as Pascal/1000 and FORTRAN 4X compilers in addition to Edit/1000 screen editing software and a new Accel/1000 program profiler and microprogram development package. Until September, the price is $57,500 -- 10% below normal list. The C compiler is a joint effort between HP and Corporate Computer Systems, Inc., Aberdeen, NJ. The $4,000 package runs on 1000s using the RTE-IVB Real Time Operating System.

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

EDP industry report

• THE INTERNATIONAL DATA CORPORATION'S NEWSLETTER FOR EXECUTIVES CONCERNED WITH THE ELECTRONIC DATA PROCESSING INDUSTRY

"THE GRAY SHEET" JUNE 30, 1980 • VOL.16,NO.4 P.J. McGOVERN,PUBLISHER

AT&T Appeals $1.8 Billion Judgment -- Page 6

IBM ATTEMPTS UNITED FRONT IN OFFICE PRODUCTS REALM

For the first time EDP/IR can remember since IBM created its triumvirate of major divisions, corporate has played a hand in coordinating product announcements. The three divisions, Data Processing Division, General Systems Division, and Office Products Division labored mightily and brought forth several items, most of which speak of communications that will, some time in the future, tie in various IBM products so they can exchange documents.

Stealing the spotlight from the communications software announcements is the Displaywriter, a "software based" and "building block" product that is IBM's entry into the communications, standalone word processing arena. It has few new hardware components, save an IBM daisy wheel printer. Overall, it seems IBM is playing by DP rules in what used to be word processing environs:

- Many of the product features, especially communications, will not be available for over a year.
- All of the software for the Displaywriter is unbundled, including even the basic text elements.

Some of the highlights of the various announcements:

- The Displaywriter, a standalone system with shared printer option, looks less expensive than many other low-end systems -- but the single station price of $7,895 excludes a minimum software charge of $15/mo. Both asynch and bisynch communications will be offered.
- IBM is upgrading the 5520 capabilities free of charge, adding files processing and arithmetic functions and bisynch communications, another move in the softening line toward SNA. Also, there is enhanced document interchange support between the 5520 and OPD products including OS/6, mag cards, and the Displaywriter.
- The 8100 replaces the 3790 as the 3730's backbone; and the 8100 picked up WP capabilities.

EDP Industry Report is published in annual volumes of twenty-four issues each by International Data Corporation, Post Office Box 915, 214 Third Avenue, Waltham, MA 02254. Entire contents © 1980 by International Data Corporation. **Director,** James Peacock; **Editor,** Molly Upton; **Census Editors,** Paul Arabasz, Lloyd Cohen; **Contributing Editors,** Dave Dillman, John Gantz, Peggy Eisen, Nancy Scull, Carol Weiszmann; **Circulation Manager,** Mary M. Trayte. Patrick J. McGovern, Chairman, International Data Group, John P. Breyer, President, International Data Corporation. Editorial ideas and information are researched and formulated by the editorial staff. Information and opinions in each issue are based on the best information available, but their accuracy and completeness cannot be guaranteed. **Subscriptions:** One year, $195; three years, $475. Single copies priced as indicated on inside pages. Prices for multiple copies on request. Reproduction without written permission is completely forbidden. Telex 92-3401; Telephone **617/890-3700.**

Remember when the 8100 was touted as the most significant announcement since the 370? Well, the Displaywriter is OPD's most significant office system announcement since IBM launched the word processing industry in 1964, according to John R. Young, president of OPD. (That precludes the Office System/6.) The Displaywriter, which looks now like a nice fit for small users, "is designed to grow with our customers."

Although IBM succeeded in coordinating the New York press announcement with fanfare and hoopla, it apparently is having difficulty orchestrating which division's press people discuss which products. The underlying theme of the announcement is integration. Whether this scheme is more than a paper panacea is up to IBM to prove. The nub of the announcement focuses on software, and many of the communications plans include a host CPU.

The Displaywriter

The Displaywriter is a low-end, standalone product assembled from assorted components such as the 3101 terminal screen, existing floppy drives, and an electronics box with from 192 to 224 Kbytes and an Intel 8086 as well as some IBM chips. Could this be an indication of what the 3101 could become, should IBM choose to endow it with more smarts?

Perhaps even more notable than the Displaywriter itself are the printers. IBM apparently has lowballed the world by incorporating a Selectric ball version in a 15.5 char./sec unit that sells for $2,800. (EDP/IR trusts IBM has improved reliability since the days of yore when they were offered as part of the mag tape Selectric units.) More interesting still is the IBM version of a daisy wheel printer (it has been buying from Qume) that enables an operator to change the font without removing the ribbon. It is available in 40 and 60 char./sec units for $3,875 and $4,275. A Qume single sheet paper feeder system costs $2,000. Deliveries without communications begin in January.

There is one electronics module per screen; the only sharing possible is through a software option that permits up to three units to share a printer. But the printer doesn't handle the queue on a first-come first-served basis; rather it handles whatever jobs come from one unit, then the next unit, etc.

All software, including the basic text editing programs, is loaded from diskette. The notable software feature is automatic proofing, which comes standard in the basic text package. The feature can handle up to 500 words inserted by the user and uses stem and prefix and suffix principles to spot words that may be misspelled. A text package costs $15 or $16/mo, thus adding a minimum of $192/year to a user's budget, while the communications packages are each $10/mo.

Acknowledgement of rest of world

The Displaywriter announcement contained one of the few if not the first acknowledgement by IBM that there is a nonIBM world. IBM offers asynch communications as well as bisynch on the Displaywriter (and indicated it plans to put SNA on it as well). IBM mentions that the asynch feature allows the Displaywriter to communicate with a "wide variety of suitably programmed IBM computers and other 'main frame' and mini-computers, as well as many compatible terminals and communicating word processors." The Displaywriter can emulate a mag card unit as well as a 2741 and TTY.

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

There are different memory requirements for asynch and bisynch units, so users have to predetermine what their needs will be. An optional feature permits two modems, each with a different protocol, to be hung on one Displaywriter. With the proper modem, the Displaywriter can support automatic answer capability. And IBM didn't forget its mag card base. There is a conversion software package.

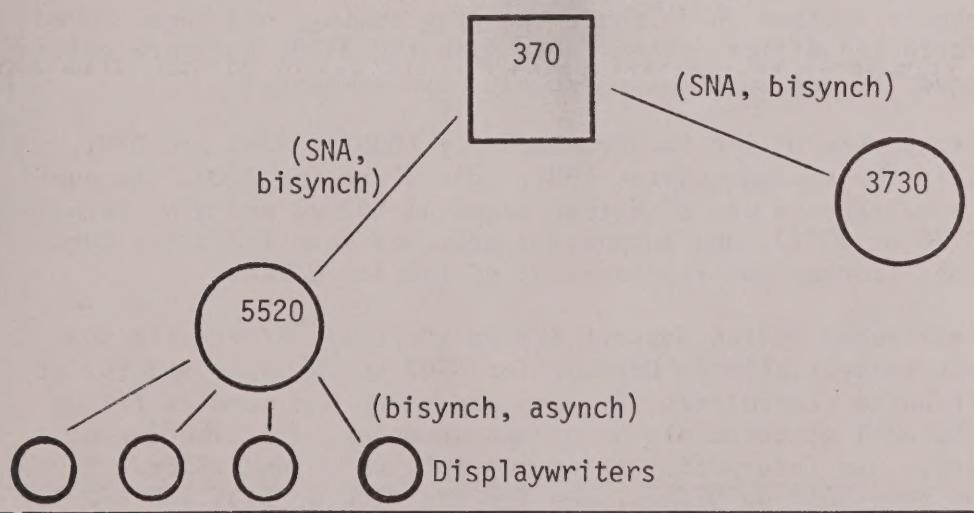
Components pricing

The display module is priced at $365 purchase, while the electronics modules range from $3,310 for 160K to $4,210 for 224K. The keyboards cost $320, nearly as much as the display module. Memory is priced at $450 for 32K. Although IBM indicates there is only one station per electronics module, it seems to EDP/IR that this is a prime candidate for a master/slave situation, thus still further reducing the cost per station.

IBM'S OFFICE FAMILY

Division	Product	Description
OPD	Displaywriter	Standalone display and floppies, internal logic and memory, and communications
GSD	5520	Shared logic electronic mail/WP system, now with some file handling, arithmetic functions
OPD	6670	Laser printer with communications
DPD	3730	Handles DP and WP concurrently, now with 8100 backbone; designed for 370 attachment but can be standalone
OPD	OS/6	Multistation word processor, not much communications

A HYPOTHETICAL CONFIGURATION



Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

Promises, promises

IBM says it intends to tie its pieces together, but specifics weren't offered. In the foreseeable future, things won't start to meld 'til sometime in 1981 when the first pieces will be available. And even when the pieces are in place, the capability offered will be simply document distribution rather than the ability for one system to edit a document created on another system.

However, IBM could go one step further, EDP/IR thinks, and develop its own version of a black box that will provide function code compatibility between its various systems. This would then enable one unit to alter a document created on another type of IBM system, at least.

The question is, will IBM carry its recognition of the world one step further and some day offer a black box that offers code compatibility with other vendors' machines as well as its own? Seems to EDP/IR this would make some sense in conjunction with either the 6670 or 5520, whatever turns out to be the vehicle commonly used to transmit documents within organizations.

While the intent is integration, there is some confusion in EDP/IR's mind as to how. IBM seems to be giving both a yes and a no vote to SNA. On the one hand, the 5520 document distribution system will get bisynch communications in September 1981, a move back from the hard-line advocacy of SNA. On the other hand is the Distributed Office Support System (Disoss), a software element for the 8100 and 3730 that permits filing and retrieval of documents at a host and interaction among multiple 8100s and 3730s. Disoss functions only under SNA.

A brief rundown on some communications options:

- The Displaywriter will have asynch and bisynch at $10/mo for each, when the software is delivered in June 1981.

- The 5520 gets bisynch in September 1981, for free. The document interchange support between the 5520 and OS/6, mag card units, and the Displaywriter allows 5520 users to hook up these systems as I/O terminals.

- The 8100, running under DPCX, the control executive that does not permit remote systems to do their own programming, has been dubbed the "distributed office system." As with the 8100, software prices are reduced for use in remote systems. Its elements:

  + The Distributed Office Support Facility (DOSF), $343 and $291, available the second quarter 1981, adds WP to the 8100. It supports simultaneous use of a text terminal (3732) and a DP terminal (3278 or 8775), and supposedly provides easy functions for creation, storage and retrieval of office documents.

  + The Distributed Office Support System (Disoss), previously announced, is available in October for $907 at the host and $82 at a distributed controller. It runs under SNA and permits filing and retrieval of documents at a host computer, distribution of documents, and interaction among multiple 8100s and 3730s. There are two programs for Disoss, one for the 8100 or 3730 and one for

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

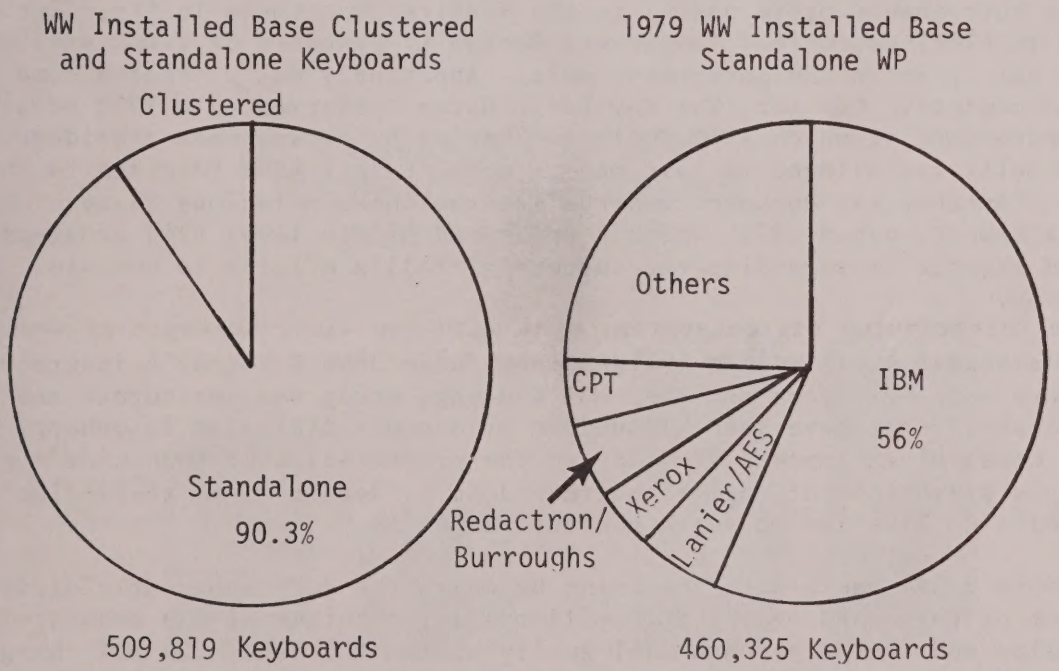
an IBM host. "Using the Multi-System Network Facility program product, Distributed Office Systems attached to any host computer in a multiple processing network can access Disoss as an application in the host computer in which Disoss is stored."

+ The Document Interchange Facility (DIF), available the second quarter 1981, costs $325 and $35, allows "linkage between distributed word processing systems, including the 3730, and host-based, advanced text processing applications, such as composition.

James Peacock, IDC's vice-president of research, observed, "DPD announced a lot of software -- much of it priced at significant levels -- to furnish the data processing answer to the office integration problem. The question, still, is whether office people want DP solutions for use in their everyday life. To its credit, it looks as if IBM has focused more on integration than on operations -- and this is likely the appropriate role for the DP vendor vis a vis its customers' office requirements."

The word processor marketplace is divided into standalone and clustered units, as well as by whether they have a display. Although the Displaywriter is an entry into IBM's traditional stronghold of the standalone sector, the clustered sector is growing at a far more rapid rate, albeit from a smaller base. Between 1978 and 1979, the standalone sector grew 20.3% to 460,325 units whereas clustered keyboards grew 86% to 49,494. But despite the rapid growth, the dollar value of shipments of clustered keyboards is not projected to reach that of standalone keyboards until 1983.

1979 WORLDWIDE INSTALLED BASE
OF STANDALONE WORD PROCESSORS
(Copyright 1980 -- International Data Corporation)



IBM's share of the standalone word processor base shrank 10% since 1978, despite a 20.2% growth in the total base of units.

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

MCI WINS ANTITRUST SUIT VS AT&T,
BUT APPEALS COURT IS NEXT ROUND

Add one more victory in court for MCI President William G. McGowan in his continuing battle for the Davids of the world vs. the Goliath AT&T. After four months of testimony, a 12-person jury found AT&T guilty of 10 of the 15 charges leveled against the mammoth communications firm and awarded MCI $600 million of the $900 million requested in damages. Under the Sherman Antitrust Act, the award was tripled to $1.8 billion.

The case is the veritable David vs. Goliath. The $1.8 billion award represents about 4% of AT&T's annual revenues, but about 12 times those of MCI. In the meantime, interest is piling up for MCI to the tune of $3 million a week. MCI's revenues last year were $144 million.

But AT&T isn't about to roll over and pay without a fight. It has indicated the next stop is the U.S. Seventh Circuit Court of Appeals. For although the sum is relative peanuts for it, the precedent could be indeed painful. Remember when Telex won initially against IBM and several others decided to follow suit? Although IBM seems to be winning in court, it still hasn't completely disposed of all the other suits, and its legal fees are awesome.

After the appeals, the case is likely to land in the lap of the Supreme Court. Neither MCI nor AT&T is likely to stop short of the ultimate decision-making body. MCI has already been to the Supreme Court with cases vs. AT&T six times and come away victorious each time. None of the suits against IBM continued through to a Supreme Court decision. Telex withdrew just short of a Supreme Court ruling, much to the dismay of the rest of the plug-compatible community, because it was potentially over a barrel financially to IBM.

MCI's suit should prove useful to the Justice Department in its efforts. And also to AT&T, whose lead lawyer was George L. Saunders Jr., who will also have the same post in the government suit. Apparently MCI presented some telling documents. One set, The Key Largo notes, referred to a 1972 presidents' conference at which AT&T Chairman Charles L. Brown, then president of Illinois Bell, was alleged to have made a comment that AT&T "decided to choke off MCI. "Another key document was the Interbusiness Relations Issue or the Synthesis Report, dated 1973, wherein upper and middle level AT&T management expressed skepticism regarding the success of Bell's efforts to contain competition.

AT&T's appeal will include charges that Judge John F. Grady's instructions to the jury were erroneous and that MCI's damage study was inaccurate and therefore should not have been allowed in evidence. AT&T also is unhappy with the time constraints imposed by Grady on the presentation of each side's case and Grady's prevention of former chairman John D. deButts from testifying about AT&T's "obligation to serve the entire public."

Saunders finds fault with the means by which the jury apparently arrived at the sum of the award -- the $600 million is two-thirds of the requested $900 million and the jury found AT&T guilty on two-thirds of the MCI charges. Saunders maintains that one charge on which the jury acquitted AT&T accounted for one half the sum requested by MCI, thus the award is overly generous to MCI. The jury acquitted AT&T of discriminating against MCI in favor of Western Union on interconnections. Other charges on which AT&T was found not

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

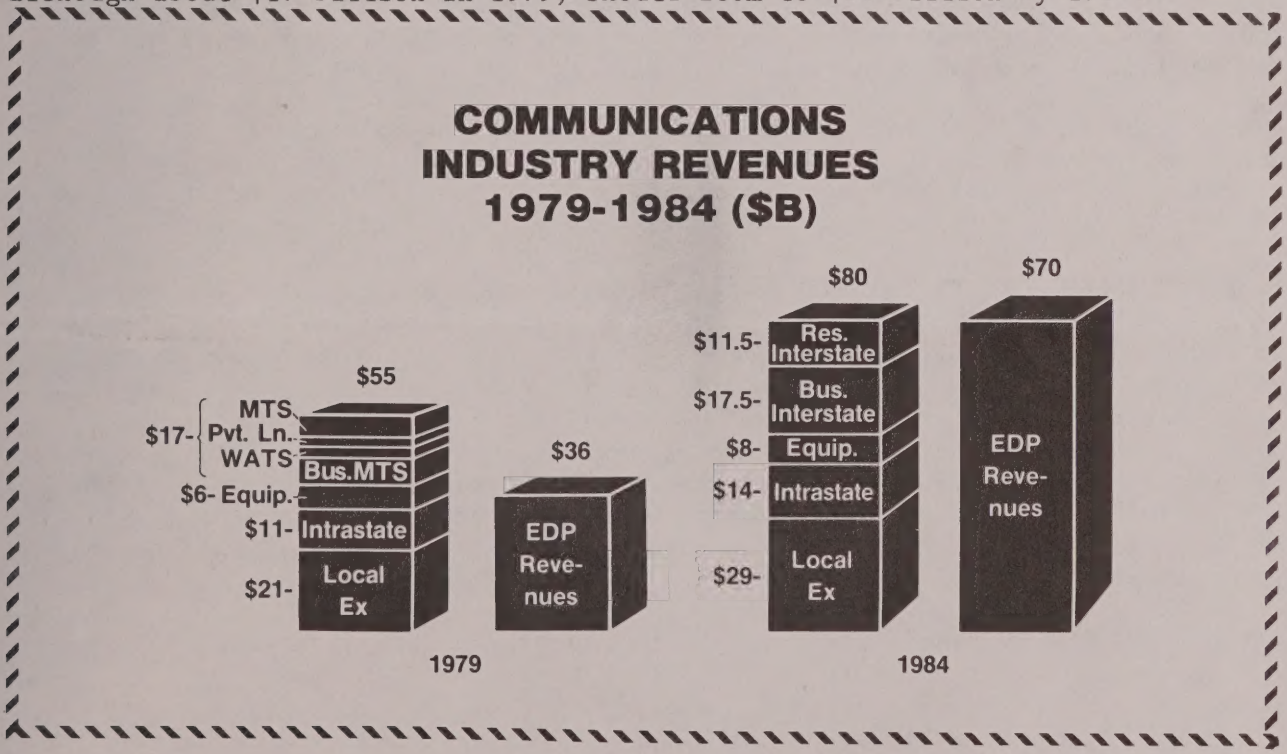
guilty were: charging MCI unreasonably high prices for interconnections; late or faulty installations; interfering with MCI's financing; and predatory pricing of Telpak.

The jury found AT&T guilty of:

- Refusing FX and CCSA interconnections to MCI.
- Disconnecting FX, CCSA and other services to MCI customers.
- Tying in AT&T local and long distance service, offering them only in a package form.
- Not providing interconnection for multipoint service.
- Not providing interconnection beyond a certain distance from MCI's terminals.
- Not providing appropriate interconnection equipment or procedures.
- Negotiating in bad faith for an interconnection agreement.
- Filing state tariffs in bad faith.
- Preannouncement and predatory pricing of Hi-Lo.

What's the bounty?

Although the DP community thinks its industry is large, it's overshadowed by the communications industry revenues now. The piece of the pie at issue between MCI and AT&T involves interstate usage, which although about $17 billion in 1979, should zoom to $30 billion by 1984.



Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

• WHO LEFT WHOM AT THE ALTAR? Storage Technology Corp. called off the merger with Amdahl, but there is considerable speculation as to whether it was Amdahl or Fujitsu, which owns 27% of Amdahl, that formulated terms unacceptable to STC. Word has it that one of the conditions was that STC keep in production for 10 years all its current products. Could it be that Fujitsu was never enthralled with the deal because it sells a fair portion of its disk equipment through Memorex? Or could it be that Amdahl got cold feet when it discovered that STC seemed to be emerging with a major amount of weight such as headquarters in Colo., and its chairman as the chairman of the combined company. Amdahl indicated that it intends to push ahead with its acquisition of Tran, which had been put on the back burner during the affair with STC.

• MASSTOR SIGNS OEM PACT WITH FUJITSU for CPUs that will be the brains of its Masstor Shared VSS integrated file management and control system. The CPUs will range in size from those comparable to the 148 to the 3032. Although Fujitsu has no economic holdings in Masstor, the two companies plan collaboration on R&D efforts. Masstor is planning several product subsets or starter sets in addition to its full-blown, currently custom back-end units.

• DIGITAL EQUIPMENT BEEFS UP MINC laboratory systems with the PDP-11/23 processor, giving the new configurations twice the processor speed and four times the memory capacity of the old systems. Prices start at $15,600.

• FLOPPY DRIVE PRICES CONTINUE downward trend. Commodore Business Machines, maker of Pet, has a drive that uses 5.25 inch media that costs $595 for 130K. The unit, the CBM 2031, was initially developed by Shugart Associates and Matsushita. Commodore also unveiled a $3,500 dual drive that holds 3.2 Mbytes.

• SIGN OF THE TIMES. Ash from Mount St. Helens may be causing damage to magnetic media. Verbatim, maker of floppies, urges users to back up valuable data, keep disks stored in boxes and in their protective sleeves.

• DATA GENERAL HAS DISCOVERED BASIC in a big way. The firm recently announced business Basic with its smaller commercial systems using disk operating system, and now has business Basic available for use with its Advanced Operating System. Price is $6,100 for first copy, $4,000 additional.

• HP UNBUNDLES SUPPORT FEATURES in attempts to let users pay only for what they want. In this way, HP hopes to keep costs to a 9% increase rather than 15%. Users may select from four levels: Standard, which is same-day, four-hour response up to 100 miles from an HP service center; Basic System, which is next-day response at a savings of 20% to 25%; On-Site Product Service that provides next-day response, on-site maintenance for products with internal diagnostics at a further savings over the Basic coverage. And a symbol of the future, a Field Repair Center agreement under which users send terminals, desktops, and selected peripherals to any of six centers, which give a three-day turnaround.

• ICL UNVEILS ME29 range of CPUs, said to give throughput five times faster than the 2904/50. Prices start at $68,550. The systems can handle word processing, DP, Viewdata and electronic mail functions. The Transaction Machine Environment incorporates functions of virtual storage without the overhead.

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

EDP industry report

• THE INTERNATIONAL DATA CORPORATION'S NEWSLETTER FOR EXECUTIVES CONCERNED WITH THE ELECTRONIC DATA PROCESSING INDUSTRY

"THE GRAY SHEET" JUNE 23, 1980 • VOL.16 NO.3 P.J. McGOVERN,PUBLISHER

1979 Was Year of Non-IBM Shipment Growth -- Page 5

IBM BUILDS BRIDGE INTO EIGHTIES WITH NEW MVS, DISKS, CHANNELS; CHARTS "TIGHTLY-COUPLED" PROCESSOR PATH

"Tightly coupled processors continue to be a prime vehicle for implementing large advanced IBM systems. In conjunction, programming systems continue to be designed and enhanced for tightly coupled processors." -- IBM product literature

IBM is taking the building block approach to life, having stubbed its toes in past computer "family" introductions. So although users have been anxiously awaiting the "H" Series, perhaps one day those with the newer peripherals and software on various boxes will find they already have it. In this release:

- The 3042 Attached Processor Model 2 and the endorsement of "tightly coupled" CPUs. The Model 2 says "buy me" with a low purchase/lease ratio of 23 . . . a hint that other systems may be in the pipeline. The box has up to 12 channels (Model 1 has none), giving the 3033 AP user 28. And the 3033 can directly address 32 MB, giving IBM users a bigger machine than they can get from Amdahl.

- New operating system software, MVS/SP JES-2 and -3, which includes more microcode, incorporates all elements of MVS/SE, and claims improved performance . . . unbundled of course (SP = "System Product"). Some key features for use with fast disks, such as the Data Facility/Device Support, are priced separately.

- The 3814 switching management system, a rudimentary back-end (but not data base) processor that supports the interconnection of up to 128 switching nodes.

- Coronado, alias Whitney, in the form of the 2.52 Gbyte 3380 -- four times the capacity of the 3350 for about twice the price -- accompanied by the smaller capacity 3375.

Of special interest: the 3042 Model 2 is field upgradable from the Model 1, as are the new models of the 3880 disk controller that support the 3380 and 3375.

EDP Industry Report is published in annual volumes of twenty-four issues each by International Data Corporation, Post Office Box 915, 214 Third Avenue, Waltham, MA 02254. Entire contents © 1980 by International Data Corporation. **Director,** James Peacock; **Editor,** Molly Upton; **Census Editor,** Paul Arabasz; **Contributing Editors,** Dave Dillman, John Gantz, Peggy Eisen, Frank Kline, Ellen Rogers, Carol Weiszmann; **Circulation Manager,** Mary M. Trayte. Patrick J. McGovern, Chairman, International Data Group, John P. Breyer, President, International Data Corporation. Editorial ideas and information are researched and formulated by the editorial staff. Information and opinions in each issue are based on the best information available, but their accuracy and completeness cannot be guaranteed. **Subscriptions:** One year, $195; three years, $475. Single copies priced as indicated on inside pages. Prices for multiple copies on request. Reproduction without written permission is completely forbidden. Telex 92-3401; Telephone **617/890-3700.**

Deliveries of all components are scheduled to start within a year. To some, it may seem that patience is a virtue. To others, it may indicate that other machines brewing in DPD are on their way. However, IBM probably wants the operating system and disks up and humming before delivering newer CPUs. The 3042-2 shipments start in the third quarter 1980, but the 3814 switch and the disks won't show up until 1981. Release one of both operating systems is scheduled for December 1980, with Release two not until June, 1981.

According to information hidden deep in IBM product literature, price/performance of IBM's attached and multiple processor configurations exceeds that of initial estimates. Apparently 1.7-to-1.9 is a more accurate power rating than the previous 1.6-to-1.8. The power rating, measured under the old MVS/SE, compares MP or AP performance with that of a uniprocessor.

But remember, power ratings don't take into account the number of channels a CPU complex has. Thus the Model 2 may be no more powerful than the Model 1 3042, but it could provide much better throughput.

MVS/System Products and more unbundling

The MVS/SPs come in two flavors -- MVS/SP Job Entry Subsystem 2 and 3, $1,375/month -- and incorporate all MVS/Systems Extensions. They enhance certain MVS control and storage management functions and provide software support for the new disks and the 3033 Extended Addressing feature that enables 3033 MPs to address up to 32 Mbytes, double the previous capacity.

(But there are prices to pay for use of all that memory. The extended addressing costs $400/mo on a four-year lease and $12,200 purchase. It requires additional control storage and a 3038 multiprocessor communications unit, which costs $13,810/mo or $275,000.)

The first release will support the new devices, incorporate MVS System Extensions, and provide for data streaming (3 MBytes/second) and speed matching for older CPUs. The second will also include: (1) Cross Memory Services, for direct communication between address spaces, allowing programs to communicate without using common virtual storage, (2) Multisystem support, including Global Resource Serialization to prevent simultaneous updating of data, (3) the extended memory support. Release two will cost $1,475-$1,800. The four unbundled program products and monthly licenses are:

- Data Facility/Device Support for the new disks ($75 for OS/VS2, $57 for OS/VS1). Prerequisite: MVS/SP, JES-2,3.

- Data Facility/Data Set Services for protection and recoverability of data on the new disks and the 3850 ($75). Prereq: MVS/SP.

- Data Facility/Extended Functions provides "more dependable and easily used VSAM catalogs ($140). Prereq: MVS/SP, DF Device Sup.

- Release 3 of the Hierarchical Storage Manager ($385) for improved automation for storage management and support of the new disks.

For the Direct Access Storage Device Migration Aid -- a handy goody for users changing disks -- there is a one-shot charge of $1,000.

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

New thin film head disk

Because of the miniaturization of disk heads and components using film technology similar to that for semiconductors, IBM has been able to provide a two-spindle disk with 2,520 MB of storage per drive. The 3380 offers a 65%-to-75% savings in floor space, heat load, and power consumption over the 3350 and the cost per megabyte is about half. A 3380 disk with controller functions costs $97,650 or $2,170 per month on a two year lease. Basic specs:

- Each disk drive has two spindles, each spindle has two "actuators." Each actuator, which can be accessed independently of the other, covers a disk space of 630 MB. Thus each disk drive supports 4x630, or 2,520 MB.

- There is a controller model 3380 and slave model; one controller disk can support three slaves, making a string length of 4 -- i.e., one string can support 10,000 MB of storage.

- Variations include (1) models with dual pathing to the actuators and (2) models with a certain amount (1.4 MB) of fixed head storage.

- The data rate of the disks is 3 MB per second, supported in the CPU with a "data streaming" facility ($40,000) for the 303Xs and 3042; for slower (1.5 MB/sec) channels on other IBM computers, a speed matching buffer ($9,650) is available.

- New models of the 3880 Storage Control device were announced ($65,400, same price as old) for control of the new disks.

Using the speed matching buffer, and the appropriate 3880 Storage Control, it's possible for the 3380 to talk to two different CPUs, one with 3.0 MB/sec channels, one with 1.5 MB/sec channels. In addition, the dual-pathing features (available on many PCM disks) of the 3380 allow multiple concurrent paths to data . . . a handy feature in case of actuator failure or CPU crash. One actuator can be down and serviced while the other one works.

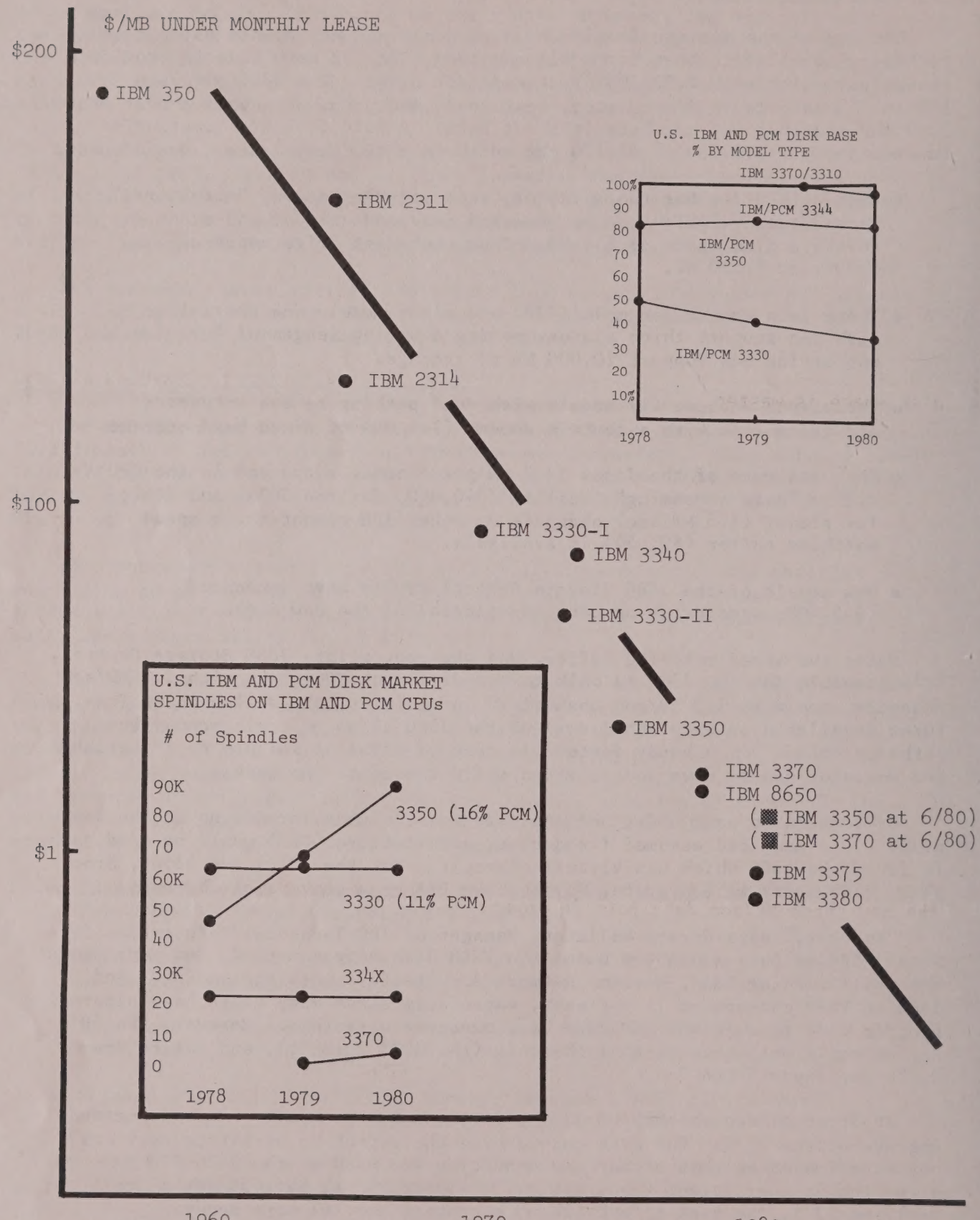
Of concern to many users and analysts was the data formatting of the new disks . . . many had assumed fixed block architecture (FBA) would be used, as it is in the 4300 which has virtual channels. But the 3330s and 3350s, from which 3380 users will migrate, do not have FBA -- a conversion obstacle.

"Further," says Gerard Hallaren, Manager of IDC Technical Information Service, "FBA is only supported under the VSAM disk access method, and many users are still running ISAM, Systems Network Architecture notwithstanding. And ISAM to VSAM conversion is not easy, especially since many users have altered program code to suit non-IBM data base management systems. However, the 'H' Series could well have virtual channels (the 303X doesn't), and future products may support FBA."

At first glance the 819 MB 3375 appears to be a count-key-data formatted upgrade of the 3370. But even considering the switch in architectures, its capacity indicates that either new densities are used or the 3370 FBA algorithm is inefficient (or artifically limited). At $46,450 for a controlling 3375, the disk offers 43% more storage for 26% more money.

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

IBM DISK HISTORY: PRICE/MEGABYTE AT ANNOUNCEMENT
(Copyright 1980 by Internatonal Data)



Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

A NOTE ABOUT DISK FORMATS

For the physical storage of information the surface of a disk platter is divided into cylinders of fixed number. Cylinders are divided into so many tracks with such and such megabyte capacity. There are two ways users can divide their data files up to put into the disk space.

Under count-key-data architecture, like that offered by the 3380, 3375, 3350, 3330, etc., user and system data is divided into blocks of various size by the users themselves (or system program). Formatting data into blocks of variable size means having some awareness of the cylinder and track capacity available, in order to keep sequential blocks of data physically close.

Under fixed block architecture, data is divided into blocks of fixed length and the system maximized to handle storage and transfer of these fixed blocks. The advantage is that the physical characteristics of the disk space become transparent to the user (and to some extent, to the computer), and the formatting commands associated with count-key-data don't take up disk space. The disadvantage: if a file exceeds block size by only a little bit, physical disk space is wasted.

The 3380 must be used with the MVS(and VM)/SP software and will attach to IBM 303Xs and 370/158s, and 168s with the right features; the 3375 will attach to 4341s and 4331 Model 2s as well, and can run under DOS/VSE.

The 3042 AP and its new "back-end" processor

As mentioned, the 3042 AP Model 2 is the "channel rich" version of the Model 1. Six channels are standard, six are optional for about $400,000 in extra features. A 3042 AP alone costs $1.255 million, but must also come with power supply, console, and coolant unit (another $260,000). And to attach an AP to a 3033 uniprocessor takes a multiprocessor attachment unit ($387,000).

(Without making any hullaballoo, IBM also reduced the price of the 3042 Model I -- to $805,000 from $895,500 -- in the announcement.)

For $55,000 to $80,000 IBM also now offers the 3814 Switching Management System, a mini/micro computer that connects I/O controllers to CPU channels. Using it, it's possible to reconfigure huge computer complexes from a single console -- up to 78 different control unit configurations can be stored and the new three MB/sec data rate is supported..

One of the models can be used as a second remote -- up to 1000 feet -- switch attachable to another 3814.

And the upshot . . .

. . . seems to be that IBM is easing into the "H" Series, offering us some software and hardware (like new disks) now. The fact that the 3380 is only supported under the new MVS/SP operating system speaks to that. Meanwhile we've got more field-upgradable units, devices designed for easier maintenance, and a recognition of the interconnection problems in modular systems. Hence faster disk data rates, buffers to handle compatibility, and devices for switching all those computer room "building blocks" around.

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

U.S. MANUFACTURERS SHIP $16 BILLION WORTH OF MAINFRAMES IN 1979
IBM'S HOLD EASES OVER A POINT; PCM GROWTH SLOWED

As EDP/IR's massive Review and Forecast issue (May 28, 1980) catalogs, U.S. general-purpose computer companies shipped $16 billion worth of mainframes and computer-room system peripherals this year. But what about the individual companies? How did they fare? As the chart below shows, IBM shipped over $10 billion; the PCM mainframe and peripheral makers in aggregate came second, shipping $1.4 billion of IBM lookalike gear. Thanks to the 4300, though, shipment growth for the PCMers, 1979 over 1978, was a mere 3%.

For historic comparison, EDP/IR has assembled the shipment data for the last four years (page 7), borrowed from IDC's Industry Analysis Group. Note:

- IBM's shipment growth dipped last year, as, in fact, did the whole IBM base. The PCM CPU makers saw the most strident dampening.
- Univac is steadily increasing its edge over the other non-IBM makers, cracking the $1 billion mark for the first time in 1979.
- Honeywell/Xerox (doesn't include CII-Bull) also showed impressive 1979 mainframe growth, increasing its percentage of the market by over a percentage point.
- NCR's and Burroughs' mainframe growth has turned around; CDC's and DEC's has declined, in part because of emphasis on other areas.

In fact, it's important to remember that in an increasingly diverse industry, mainframe shipments no longer tell the whole story . . . information processing revenues (EDP/IR, R&F, May 28, 1980) show impressive growth for all the non-IBM mainframers, especially CDC, DEC, and NCR. Peripherals, software, terminals, and service are of growing importance.

WORLDWIDE GENERAL-PURPOSE COMPUTER MARKET FOR U.S.-BASED MANUFACTURERS
(Copyright 1980 by International Data Corporation)

	1979 Shipments		In Use Yearend 1979		1978-79
	$M	% Total	$B	% Total	Changes
IBM	10,370	65.6			
PC Peripherals	850	5.4			
Amdahl	365	2.3			
NAS	180	1.1			
Magnuson	15	.1			
Total IBM Base	11,780	74.5%	$71.9	73.3%	+11.8%
Sperry Univac	1,300	8.2%	7.1	7.3	+7.9
HIS + Xerox	1,080	6.8	7.5	7.7	+7.6
Burroughs	850	5.4	5.3	5.4	+5.8
NCR	390	2.5	2.1	2.2	+9.8
CDC	240	1.5	2.8	2.9	0
DEC	130	.8	0.9	0.9	+11.7
Other	45	.3	0.3	0.3	+12.6
TOTAL	$15,815	100.0%	$97.9	100.0	+12.0

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

WORLDWIDE GENERAL-PURPOSE NEW-BUILD COMPUTER SHIPMENTS FOR U.S. BASED MANUFACTURERS

(Copyright 1980 by International Data Corporation)

	1979			1978			1977			1976	
	$M	% Total	%Δ	$M	% Total	%Δ	$M	% Total	%Δ	$M	% Total
IBM	$10,370	65.6%	8.9%	$ 9,525	67.1%	11.6%	$8,535	68.3%	17.7%	$7,250	66.9%
PCM											
Peripherals	850	5.4	21.4	700	4.9	33.3	525	4.2	neg.	650	6.0
Amdahl	365	2.3	15.9	315	2.2	65.8	190	1.5	65.2	115	1.1
NAS	180	1.1	-	-	-	-	-	-	-	-	-
Itel	-	-	-	350	2.5	367.0	75	0.6	-	-	-
Magnuson	15	0.1	-	-	-	-	-	-	-	-	-
Subtotal PCM	$ 1,410	8.9%	3.3%	$ 1,365	9.6%	72.0%	$ 790	6.3%	25.0%	$ 765	7.1%
TOTAL IBM BASE	$11,780	74.5%	8.2%	$10,890	76.7%	16.8%	$9,325	74.6%	16.3%	$8,015	74.0%
Univac	$ 1,300	8.2%	38.3%	$ 940	6.6%	25.3	$ 750	6.0%	6.4%	$ 705	6.5%
HIS/Xerox	1,080	6.8	33.2	810	5.7	5.9	765	6.1	15.0	665	6.1
Burroughs	850	5.4	13.3	750	5.3	neg.	835	6.7	17.6	710	6.6
NCR	390	2.5	21.9	320	2.2	neg.	325	2.6	1.6.	320	3.0
CDC	240	1.5	neg.	300	2.1	neg.	345	2.8	16.9	295	2.7
DEC	130	.8	neg.	150	1.1	11.1	135	1.1	17.4	115	1.1
Other	45	.3	12.5	40	.3	100.0	20	.1	300.0	5	-
Non-IBM Base	$ 4,035	25.5%	21.9%	$ 3,310	23.3%	4.2%	$ 3,175	25.4%	12.8%	$ 2,815	26.0%
TOTAL	$15,815		11.4%	$14,200		13.6%	$12,500		12.5%	$10,830	

SOURCE: IDC Industry Analysis Group

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

• MAI CLOSES DOWN WORDSTREAM, its word processing operation bought from Avionic Engineering Products in 1977 and merged into Basic Four last year. The operation had lost $16 million in the last nine months. In the period since 1977 only about 300 Wordstream shared-logic word processing systems have been sold. MAI, who says it bought the product from Avionic for $5 million, reports it will take a $13 million writedown probably in its third quarter ending June 30. MAI will continue the processing/office system quest with Basic Four's Dataword II.

• AT LAST, COBOL FOR THE SYSTEM/38. Seeing the writing on the wall (and in EDP/IR, June 9,1980) IBM now offers a $140 per month Cobol compiler that operates under the system's Control Program Facility. It consists of a compiler with syntax checking in either batch or interacitve mode using the '38's Source Entry Utility. Said to be quite powerful -- which means the S/38 will be more competitive with non-IBM Alternatives -- the compiler should be available around May of '81.'

• BARRING COMPUTER-CAUSED NUCLEAR HOLOCAUST, Xerox computer users will have time to reap the benefits of Honeywell's new CPU, the DPS8/70C, designed for Xerox upgrades. A CP-5 and CP-6 OS spruced version of its DPS 8, the new system in typical configuration will cost $2.25 million. At that price the system includes the CPU, a communications processor, system console, and 3.3 billion bytes of disk storage, four tape units, and a couple of printers. Additional perihperals available include an expanded 8K cache memory, and a 1.1 billion-byte disk unit with two spindles and double access heads. (The headline refers to the fact that Honeywell is the vendor of note in the Norad installation that put the Strategic Air Command on alert by mistake.)

• MOVING TO PROTECT ITS FLANK, the Association of Data Processing Service Organizations (Adapso), is asking the Federal Reserve Board to hold a public hearing to decide the fate of Citicorp's application to enter the world of DP. Adapso claims that "Citishare," as the new DP service would be called, would create illegal competition for Adapso members, and that the move is in violation of federal banking laws that restrict banks to "banking."

• ONCE AGAIN, ICL BROACHES THE U.S. MARKET. International Computers Ltd, The official British mainframer, is seeking inroads into the U.S. computer market (50% of the world market, says ICL) spearheaded by Thomas J. Woodhill, the same man held accountable for the company's growth in Canada. Reports have it that the company is aiming for the number 2 U.S. manufacturer slot. This large undertaking has been kicked off with the introduction of its ME 29, a mid-range processor. ICL's earlier attempts centered around the 2900 series of small computers, a good line that met with cool U.S. response.

• MAGNUSON SYSTEMS DIDN'T WASTE ANY TIME slapping a challenging glove across the face of IBM's recent 4331 Group 2 processor introduction. A scaled down version of its M80/32 system, Magnuson's contending M80/31 processor is reputely 20 percent more powerful than IBM's machine. At $135,000 it's about 18 percent less expensive. Typically configured, the M80/31 comes with one megabyte of main memory, console, and both one and two-byte channels. The company says it is compatible with its larger M80/42 and '43 systems. Memory is upgradable to 8 megabytes at $15,700 per.

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

EDP industry report

• THE INTERNATIONAL DATA CORPORATION'S NEWSLETTER FOR EXECUTIVES CONCERNED WITH THE ELECTRONIC DATA PROCESSING INDUSTRY

"THE GRAY SHEET" JUNE 16, 1980 • VOL.16,NO.2 P.J.McGOVERN,PUBLISHER

Is the Media the Message? -- Page 3

MANY EDP MANAGERS FIND THEIR BUDGETS STABLE DESPITE IMMINENT THREAT OF RECESSION

User EDP budgets are generally holding stable with their double-digit growth charted in late 1979, despite the looming recession clouds, according to International Data Corporation's May update of its user spending survey (EDP/IR, March 2).

The survey of 51 EDP user sites found that of the 47% that have changed their budgets, roughly half have increased spending. Thus, IDC's earlier projection of a 15% increase in user spending in 1980 still looks reasonable. Those surveyed reflect small, medium and large corporations that were part of the previously surveyed sample of 190 users.

The intent of the IDC survey was to see if these users had, in light of the troubled economy, revamped their spending plans. Although it isn't surprising that there haven't been reams of budget changes in this resilient industry, some of the budget increases may reflect a slight reversal of the trend of putting function and cost out to the user. In some cases, DP indicated it is absorbing costs previously borne by other departments. Some of the survey's findings:

- The majority of companies are not changing their EDP budgets.
- Users who are wary of the economy and postponing expenditures are more likely to do so by delaying hiring than by delaying hardware purchases.

The survey queried EDP users about correlations between the status of their budgets -- decreased, unchanged, or increased -- and three other criteria: economic expectations, status of the budgets of other departments, and user site size.

The results are tabulated in the chart on page 2. But not all answers are best described by figures. An employment agency chain that had 47 agencies nationwide thought itself a good economic barometer; it observed that recession and related cutbacks are not universal occurrences. "Business in towns like Detroit and other parts of Michigan are hurting; towns like San Francisco

EDP Industry Report is published in annual volumes of twenty-four issues each by International Data Corporation, Post Office Box 915, 214 Third Avenue, Waltham, MA 02254. Entire contents © 1980 by International Data Corporation. **Director,** James Peacock; **Editor,** Molly Upton; **Census Editors,** Paul Arabasz, Lloyd Cohen; **Contributing Editors,** Dave Dillman, John Gantz, Peggy Eisen, Nancy Scull, Carol Weiszmann; **Circulation Manager,** Mary M. Trayte. Patrick J. McGovern, Chairman, International Data Group, John P. Breyer, President, International Data Corporation. Editorial ideas and information are researched and formulated by the editorial staff. Information and opinions in each issue are based on the best information available, but their accuracy and completeness cannot be guaranteed. **Subscriptions:** One year, $195; three years, $475. Single copies priced as indicated on inside pages. Prices for multiple copies on request. Reproduction without written permission is completely forbidden. Telex 92-3401; Telephone **617/890-3700.**

and Houston are booming." Brewers and bottle cap manufacturers report their businesses are "recession proof" because in hard times sales usually pick up. "People have more time to sit around and drink pop."

But all are not so lucky. "We're watching every nickel we spend," one company moaned. Another mentioned having to make up two budgets, one with a hypothetical 10% chunk removed so management could calculate how such a reduction would affect its EDP department.

Interestingly, the majority of respondents, 71%, indicated the status of the DP budget is the same as other departments' budgets, i.e. both were increased, both were unchanged, or both had decreased. Of the remainder, 82% of the cases reflected a budget increase compared with other departments; only 18% were in unfavorable status compared with other departmental budget changes. Section C's triangle in the upper right side includes the "favorable" positions while the lower left side triangle shows the "unfavorable" positions. The diagonal section between the triangles shows were the EDP budget and other departmental budgets are consistent.

CURRENT EDP USER SPENDING PLANS FOR 1980 COMPARED TO ORIGINAL PLANS

	STATUS OF EDP BUDGET						
	Decreased		Unchanged		Increased		Total
	# Responses	%*	# Responses	%*	# Responses	%*	# Responses
A. Overall Reply	10	19	32	63	9	18	51
B. By Economic Expectation							
Continued Slow Growth	2	15	8	62	3	23	13
No Real Growth	0	0	11	85	2	15	13
(Subtotal-No Recession)	2	8	19	73	5	19	26
Mild Recession	6	35	7	41	4	24	17
Severe Recession	2	25	6	75	0	0	8
(Subtotal-Recession)	8	32	13	52	4	16	25
C. By Status of Other Departmental Budgets							
Decreased	8	53	6	40	1	7	15
Unchanged	0	0	16	89	2	11	18
Increased	1	20	1	20	3	60	5
Unknown	1	8	9	69	3	23	13
D. By User Size							
Small	6	19	20	62	6	19	32
Medium	3	27	6	55	2	18	11
Large	1	12	6	75	1	12	8

*Percent of the total for the line.

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

MULTIPLE TRANSMISSION MEDIA JOIN THRONG
PROMOTING INFOTAINMENT SERVICES

"The times they are a changin." . . . Bob Dylan

In case you haven't climbed atop your building's roof and surveyed the panoramic scene lately, there have been some significant changes occurring at a dizzying pace within the last couple of years -- even the last couple of months. The magnitude of the effects of these changes on the pattern of daily life and the economic realm remain to be seen.

One thing is for sure; most of the ingredients necessary for the next quantum leap in Americana are present. (Some examples of previous quantum leaps in EDP/IR's estimation: radio, TV, cheap calculators, and digital watches. Can your six-year-old tell time via the big hand and the little hand? Chances are he can't; he reads the numbers on his Casio watch instead.)

Take the melange of current happenings, stir together with a dose of the 1980s economics including pressure to conserve oil, and conjure out of the witches' brew some fun times ahead. A list of ingredients:

- Improved transmission capacity on satellites, which facilitates ...
- ... Booming cable TV. All cable being installed now has two-way transmission capability. Lots of big boys are in the game such as American Express with Warner, CBS, Ted Turner, Getty Oil and four Hollywood movie companies, as well as others.
- The proliferation of microwave communications gear. Around Boston's Route 128 area, this sprouted up literally this winter.
- Less costly, smaller antenna receivers for satellite transmission.
- Recognition of the importance of information -- already assembled in an understandable form -- ergo the popularity of data base services. Dun & Bradstreet bought National CSS; McGraw-Hill bought Data Resources, Inc.; Chase Manhattan bought Interactive Data Corp.
- The phenomenal growth in desktop and small business computers.
- The forthcoming advent of videodisks, which may well be a catalyst in evolving everyday use of data bases, whether they be the stock table one formerly read in the newspaper, a list of Caesar's campaigns, or an economic index.

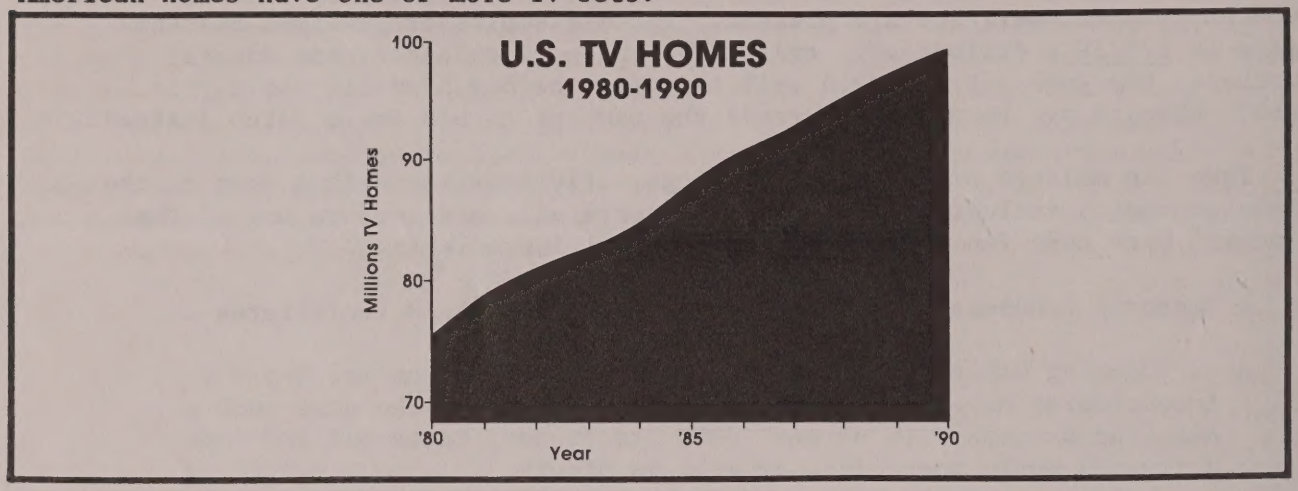
Like any boom industry, cable is attracting newcomers with their own variations on a theme. Currently cable goes to subscribers for a fee, and some operate on a pay-as-you-see basis. When the TV signal is carried via satellite, there's the temptation to put up one's own antenna dish and avoid payments to the cable companies. This is, in fact, possible, and an outfit in Massachusetts sells dishes to homes.

The latest would-be participant is a satellite company, Comsat General Corp., which formed a subsidiary, Satellite Television Corp., as its vehicle to pursue satellite-to-home subscription television service. Earlier, Comsat

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

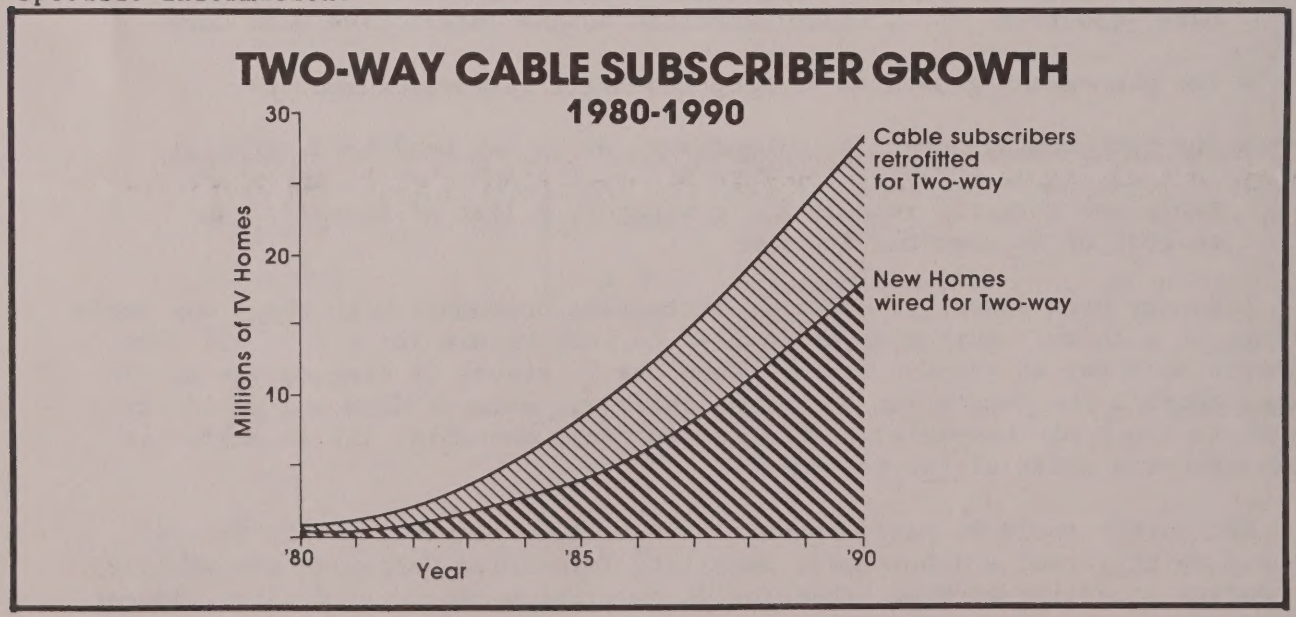
was negotiating with Sears Roebuck for a joint venture, but that fell through and Comsat indicated it is still seeking affiliates.

Much of the key lies in two-way communications capability. While not a new thing to those in the DP world, its ramifications for everyday life could be significant. The ubiquitous TV is moving from a passive sender of preprogrammed scenarios to a means of transmitting to the user specific information requested. In addition, the user becomes transformed from the silent majority to a citizen who can make himself heard, simply by pressing a few buttons linked with the TV and a communications capability, such as cable. The TV is ubiquitous. There are more TV sets in the U.S. than bathtubs. And 98% of American homes have one or more TV sets.



But having a TV set is only part of the answer. Cable TV provides a broadcast medium and now goes to between 15 million and 16 million homes. By the end of 1980, cable subscribers will grow to 19.5 million or 25% of the TV households. And by 1985 half the TV homes in the country will be passed by cable wires, thus offering vast potential for penetration.

But a more important indicator is how many homes will have two-way cable, which not only serves as a broadcast medium but also transmits requests for specific information.



Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

Thus cable offers at least one method of two-way communications that can be useful when sending to and receiving from a large number of locations.

Qube, now owned by Warner Amex whose parents are Warner Communications and American Express, is one of the more advanced uses of cable's two-way capabilities, and is illustrative of the lure of the potential market. Qube's two-way response capability has been installed in Columbus, Ohio, for some time and is expanding to other communities. With the advent of the Qube III console, the company is expanding its efforts in the information retrieval services including home financial management, teleshopping, security, information retrieval, pay per view programming, and narrowcasting.

The new Qube III console, called the BT-1300, can handle up to 110 program channels and is said to be able to provide "any home service, data information retrieval or video entertainment programming currently available or that may develop in the next decade." The device has 12 interactive response buttons. Pioneer Communications of America, manufacturer, is marketing the terminal to interested cable companies.

For those using Ma Bell, there are different ways of approaching the infotainment market -- the high-priced way, using a desktop computer; and the low-priced way, using a keyboard or keypad and a TV.

Radio Shack is involved with both approaches. Taking the media and the message one step further is Compuserve, a wholly owned subsidiary of H & R Block. Compuserve has:

- A marketing agreement with Tandy Corp.'s Radio Shacks to sell software facilitating access to the Compuserve network and some time on Compuserve. The software, at a top price of about $25, will be available for TRS-80 as well as other popular desktops and dumb terminals. The buyer also receives instructions and an introductory amount of computer time.

- An arrangement to deliver electronically the Columbus (Ohio) Dispatch evening newspaper.

- An agreement with Columbus-based Bank One Corp. to provide on-line credit authorization, verification and processing.

Having Radio Shack sell its software is an exquisite marketing agreement. TRS-80s alone account for nearly 39% of the U.S. desktop base, and certainly Radio Shacks are conveniently located for owners of other desktops.

In pursuing the consumer, Compuserve's information service is said to be designed for ease of use as it is menu driven; Compuserve's other service, Micronet, is used by businesses that need less hand-holding.

Another service company courting this market with data bases compiled on a variety of subjects is The Source, which is accessible via terminals.

And having wowed the world with its marketing of the TRS line, Radio Shack has now stepped down to the more affordable realm of terminals with the screen being the TV set. Called TRS-80 Videotex, the unit attaches to the phone line and the antenna of a TV receiver. Software linking the unit with Compuserve's

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

services and a typewriter-like keyboard are included for a price under $430. The Videotex is an outgrowth of Radio Shack's involvement with the U.S. government's Project Green Thumb for farmers. Among the possible applications listed by Radio Shack are airline and rail schedules, electronic banking, classified advertising, news, weather, sports, and stock information.

There are a host of other applications being implemented, and, not surprisingly, AT&T is among the interested parties. AT&T and Knight Ridder have a pact to experiment with a Viewdata trial in Coral Gables, Fla., and AT&T recently had an experiment for directory assistance in Albany, N.Y. Users had display terminals that accessed both white and yellow pages.

Viewdata, Teletext

There are various types of other services that are wending their way toward the consumer and perhaps business markets. Teletext is a one-way method of broadcasting utilizing vertical blanking signals in TV transmission. Viewdata is a two-way scheme that links the telephone and the TV.

Washington, D.C., will be the site of a trial sponsored by several government agencies as well as the Corporation for Public Broadcasting that uses a Canadian system, Telidon. Developed with help from the Canadian government, Telidon has impressive graphics capabilities. The test will be primarily devoted to information retrieval capabilities summoned via a keypad. But users can also transmit information.

Videodisks

Now that the FCC has allowed firms to hook TV sets with keyboards and communications facilities (after much urging by Texas Instruments), the missing link for real use of data bases is an inexpensive storage media. Enter the videodisk. For despite the trumpet-blowing, the fact remains that it is expensive to access computers -- there are communications costs in addition to the CPU or per minute charges. But if one could downline load a selected portion of a data base onto a videodisk and then access it, or manipulate it locally, the costs of using stored digital information would drop dramatically, therefore opening the market still further.

Videodisk prices are expected to be in the range of $500 and the storage capacity is huge -- as much as 1 trillion bytes. Although many of the disks do not now have the capability to write over previously deposited information, their capacity is such that they can still be useful. However, EDP/IR fully believes this is a momentary glitch in the progress of technology and that by the time the market really takes off, videodisks should be able to act like normal data processing disks.

Intracity communication

Currently the communications industry is exploring intracity links. Among the schemes are satellite, cellular radio and cable. Witness Xerox's Xten plan to use cellular radio; SBS, Tymnet and LDC are joining forces in a conglomerate that will use satellite, cellular radio and cable.

Satellite communications seems to be principally suited for large volume transmission from city to city or for use by big companies. Thus a cable TV

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

station can throw its broadcast signal up to a satellite, which will then beam it for reception by central locations in other cities. The signal will then go out via terrestrial cable to the locations on its circuit.

Small dish satellite receivers are becoming available and growing in popularity, but their use is likely to be restricted to simple receive-only functions by all but very large businesses because of radio frequency spectrum limitations. These limitations are still very real, although the manufacturers of satellites and receivers are becoming increasingly clever about the clarity of signals, allowing more channels per specific amount of spectrum.

SBS-Tymnet look for local loops

Satellite Business Systems, which plans to launch its bird Oct. 23, 1980, has made some interesting pacts lately. Initially the service was targeted at very large accounts, each of which would have its own earth station, thus no need for local loops. But lately it indicated it is also interested in business from medium-size firms, presumably with some sort of shared earth station arrangement, thus needing local loops to the shared station.

SBS intends to circumvent Ma Bell in this area, and in one fell swoop seeks to expand its realm from the skies to the land. The plan involves, among others, an agreement between SBS and Tymnet and a planned partnership called LDC by Aetna, an SBS parent, and M/A-COM, Inc.

SBS has filed for Federal Communications Commission approval for a demonstration, planned by the end of this year. But there are various parties interested in this; the cable TV industry, the Justice Department and others may become vociferous.

The scheme's simplest part is the transmission of information between New York and San Francisco (SBS). Tymnet would handle the central node in each city, which will be close to the SBS station, and link these nodes with its packet switching network.

The Local Data Distribution (LDD) net, as it is dubbed, intends to use wide band coaxial cable in New York; in San Francisco it would be a two-part system of coaxial cable and specialized radio using the 10 GHz band. Users would have one low-speed port, up to 9,600 bit/sec, and one high-speed port, 56K bit/sec. In each city, a cable TV company would provide connections from its head-end facilities to the LDD nodes.

But there may be more to the agreement than simply local loops:

- SBS probably will have excess capacity on the satellite, and Tymnet might be a willing customer.
- The agreement might herald a more rapid offering by SBS of X.25 compatibility than via IBM.
- Could SBS be affiliating itself, if not wending its way into, the cable TV industry via this agreement?
- The SBS pact provides for experimentation not only with cable but also with cellular radio or microwave.

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

• CONTROL DATA TAKES ON CRAY in the supercomputer field with its Cyber 205 that handles up to 800 million operation/second, eight times faster than any previous CDC machine and "more than three times faster than any other computer currently available." The 205 incorporates LSI circuitry and a vector processor unit. Typical configurations cost between $7.9 million and $16.5 million; shipments are scheduled for January 1981. Cray has delivered 13 CPUs between 1976 and the end of 1979; its 1979 revenues totaled $42.7 million.

• APPLICATION SOFTWARE FOR MINIS becomes popular as manufacturers and independent software houses enter the realm. Informatics has formed a Minicomputer Application Products Division to provide cross-industry software packages for various minis and other small systems. One of the first products out of the fold is a General Ledger and Financial Reporting system for IBM's System/34. Another vendor is Digital Equipment Corp., whose Retail Products Group is offering a Dental Management System for distribution through the company's 27 retail stores. And Microdata Corp., also new to the applications marketplace, is launching a packaged system called Results that has nine programs designed for financial management and distribution markets. And then there are those who offer software for others' systems; Xerox Computer Services' Arista unit offers manufacturing applications that run on the HP 3000.

• DG SIGNS DISTRIBUTORS TO PEDDLE SMALL SYSTEMS TO STORES. Data General's recently formed General Distribution Division has signed five distributors to sell the Nova 4/C and Micronova MP/100 and MP/200 to over 50 retail computer stores. Distributors provide applications software; DG provides service. DG and the distributors are developing a program for use in training retailers and educating customers about small business computers.

• SERVICES FIRMS CONTINUE TO SUPPLY HARDWARE. The latest is none other than CDC's Service Bureau Company, which is supplying turnkey systems called Focus One to credit unions. The three customers are former SBC customers. The hardware consists of an IBM Series/1 with CDC's Certainty peripherals.

• DATAPOINT POINTS TOWARD EXPANSION. It has picked up Data Dimensions, Inc., as an OEM customer and signed a letter of intent to acquire Inforex, Inc., and an option to acquire its foreign subsidiaries.

• HP LIGHTS UP 250 WITH WINCHESTER DISK. The HP 250, a somewhat unheralded machine, now has the beef of a 12.1 Mbyte hard disk at the same $23,000 price as with triple floppies. Add-on memory price was cut 34% to $19,530/M byte and capacity was expanded to 384K.

• ROLE REVERSAL? Amdahl Corp. is offering software to IBM sites, including VM/Performance Enhancement which is said to cut system overhead for IBM's OS/VS2 MVS or SVS running with VM/370. Price is $1,750/mo per system.

• HONEYWELL BEEFS UP LEVEL 6 SOFTWARE and industry speculators ponder when the Level 6 will assume the dual role of word processing in addition to data processing. Release 2.0 of GCOS 6 Mod 400 gives Advanced Cobol ($5,395) and Advanced Fortran ($3,825), both of which generate reentrant code, and a Forms Data Entry Facility that can support up to 24 terminals, 3271 capability that makes the 6 appear to an IBM host as a cluster of up to 24 terminals, and a Transaction Control Language.

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

EDP industry report

• THE INTERNATIONAL DATA CORPORATION'S NEWSLETTER FOR EXECUTIVES CONCERNED WITH THE ELECTRONIC DATA PROCESSING INDUSTRY

"THE GRAY SHEET" JANUARY 16, 1981 • VOL.16,NO.17 P.J. McGOVERN,PUBLISHER

Superminis from HP, HIS -- Page 5

DECADE BEGINS WITH 'DEREGULATION' AS BYWORD; ON OTHER FRONTS, FOCUS SHIFTS TO SOFTWARE

During 1980, the stage was set for the battle of the decade between AT&T and IBM. The budding "deregulation" trend burst into bloom with the Federal Communications Commission's (FCC) Computer Inquiry II decision that gives AT&T the green light for "enhanced" or unregulated offerings as long as they are conducted by a separate entity.

A concommitant result of the decision allows services firms to provide enhanced services without slogging through the mire of paperwork imposed by regulatory status. Thus there should be much more action in the communications/service arena for both observers and participants.

Software, which has progressed through the ages from an unpriced quantity to the primary revenue source for a host of companies, will continue its climb to preeminence and in 1981 should dominate as the most important aspect of the computer industry. Even now, software is becoming evident in different forms including programs and functions embedded in chips. Other trends EDP/IR sees:

- Move toward consumer-oriented marketplace affecting channels of distribution, services, desktops, information appliances, and more concerted thrusts into the home.

- The rate of technological change in the next four or five years will be unparalleled.

- Office automation growth as vendors search for direction; users want cost-effective, integrated, compatible systems.

- Increased emphasis on communications, both in local networks, within a metropolitan area, and intercity. Watch Ma Bell, Satellite Business Systems and Cable TV battle for the home.

- Startup firms have at last found the roads to financing. Investors consider the industry a darling (reminiscent of 1969).

EDP Industry Report is published in annual volumes of twenty-four issues each by International Data Corporation, Post Office Box 915, 214 Third Avenue, Waltham, MA 02254. Entire contents ©1981 by International Data Corporation. **Director,** James Peacock; **Editor,** Molly Upton; **Census Editors,** Paul Arabasz, Lloyd Cohen; **Contributing Editors,** John Gantz, Jack Hart, David Moschella, David Terrie, Nancy Scull; **Circulation Manager,** Mary M. Trayte. Patrick J. McGovern, Chairman, International Data Group. John P. Breyer, President, International Data Corporation. Editorial ideas and information are researched and formulated by the editorial staff. Information and opinions in each issue are based on the best information available, but their accuracy and completeness cannot be guaranteed. **Subscriptions:** One year, $245, three years, $590. Single copies priced as indicated on inside pages. Prices for multiple copies on request. Reproduction without written permission is completely forbidden. Telex 92-3401; Telephone **617/890-3700.**

SIGNS OF MORE TO COME

Among the events that presage trends, EDP/IR suggests these as examples of the '80s kickoff.

- Awareness of the potential of Japanese vendors in the U.S. heightened when: Fujitsu formed a joint venture with TRW that initially will handle point of sale systems but which might be an excellent vehicle for a beachhead in the 370-range of systems; Amdahl fumbled twice in attempted mergers with Memorex and then Storage Technology Corp. (There's widespread suspicion that Fujitsu's presence as an Amdahl shareholder, if not demands, nixed the deals.); Sony announced it intends to span the range of office automation products, commencing with a tiny terminal and a word processing system; NEC is pushing its repriced Astra small business system and garnering more daisy-wheel pacts as in Honeywell's office venture.

- Thought: the Japanese are really going to make hay in the desktop arena. The Hanover Fair was populated with Japanese-made systems, possibly prepping in Europe before making the big plunge in the U.S. Rumors abound of a NEC desktop priced around $800. In desktops, the patterns of distribution and support and rules of the game lend themselves more to the import of Japanese-made systems than do the mini or mainframe arenas. How about a desktop that can be compatible both with Apple and TRS-80?

- Pricing increases were frequent last year -- some companies such as DEC and IBM played the tune twice. Hikes in leasing rates and maintenance were most frequent, reflecting the cost of money and general inflation.

- Services continued to be the bazaar at Mecca attracting acquisition activity, both from within and without the fold. The trend for outsiders to get into the action continued. For example: Schlumberger agreed to acquire Manufacturing Data Systems Inc.; Hyatt Corp. eyed Trans Union Corp.; Readers Digest bought The Source. Those already in the fray include McGraw Hill (DRI); Dun & Bradstreet (NCSS, Donnelly); H&R Block (Compuserve); American Express (Warner-Amex joint venture and First Data Resources).

- Office Automation (OA) superceded Distributed Data Processing (DDP) as the buzzword. But ultimately OA will wind up being part and parcel of the DDP concept. From the top-down approach, integrating DP and other functions: Prime Computer got there first this year with its management and administrative terminals hooked to a Prime 50 Series mini -- with such goodies as tickler files, electronic mail, and appointment scheduling. Honeywell ended the year by announcing its product based on the Level 6. IBM during midyear announced that it eventually will have assorted software products to glue most of its pieces together. Datapoint put its data base retrieval software onto its Arc-based system.

- At the low end, there were a plethora of announcements, but EDP/IR thinks IBM's Displaywriter could be the hottest product by the time IBM and various systems houses fully utilize its 8086 innards.

Reproduction forbidden. Additional copies airmailed same day, $20 each; single copies to non-subsribers, $40. Call **617/890-3700.**

NO RERUNS, PLEASE

Glancing over the potpourri of events that symbolized 1980, EDP/IR herewith presents a brief list of items hopefully of the past:

- Prime rate hit 20% twice during the year, causing close scrutiny of inventory by everyone and special consternation to systems houses.
- Embargo of DP products to the Soviet Union; awareness of the importance of software and embargo of same as well. (ADR's advertisement regarding the arrest of someone attempting to lift its program tapes for delivery in the USSR was an all-time great.)
- Mainframe makers tripped on the path to use of increased density LSI components in a production mode -- Burroughs delayed some shipments and cancelled its big processor; Honeywell abandoned its big CPU with current mode logic (CML) and the industry widely suspected IBM of delaying product introductions because of component fabrication techniques.
- IBM went to the chip market for 16K RAMs and thus helped induce shortages that some others, such as Data General, said created adverse business conditions for them.
- Widely held opinion became documented fact -- Hewlett-Packard testified before a government subcommittee that inspection of incoming Japanese components showed far better quality control than those from U.S. makers. (Quality plus availability helped boost Japanese market share during the year.) Silicon Valley is redoubling its efforts to establish a reputation for quality.

IBM's 3081 "H" introduction probably set the philosophical stage for large mainframes in the near future -- evolution rather than drastic innovation. But there's still a lot of potential untapped power, Big Blue admitted. The world also expects to see some sort of native mode for the 3081.

The rate of technological change in the next four or five years will dwarf that of the past, IDC expects. IBM's thermal conduction modules (TCMs) and their innovations in packaging are significant. Packaging is emerging as the next area of challenge for IC designers.

Taking a global look, Europe appears to be softening, which represents a caution signal to those companies with lots of business there. Japan Inc. seems to be still in the phase of positioning itself for the U.S. market, and is totally committed to IBM compatibility in mainframes, not a bad idea for the remnants of the seven dwarfs to contemplate if they plan to snap much business from IBM.

During 1980, we saw several hardware vendors reprice software; the most notable aspect was IBM's step-by-step removal from the public domain of more of its operating systems. The net result, both for Big Blue and others, is revenue from particular aspects of the operating system. Amdahl already is marketing elements that it claims enhance the performance of IBM systems, and

Reproduction forbidden. Additional copies airmailed same day, $20 each; single copies to non-subsribers, $40. Call **617/890-3700.**

other plug compatible vendors, if they want to survive in a world other than 370-compatibility, will have to supply their own operating software elements.

As the focus shifts to a consumer-oriented marketplace, services have a chance to live up to their name and capitalize on providing what the user wants in an easy-to-retrieve form. Outside companies will continue to view the services arena as a vehicle for entry into the information industry.

The rules of the game are changing: customers demand better service, easier to use systems, and increased reliability; at the same time, it's getting more difficult to maintain profit margins with the old ways of distribution and the new layer of support demanded by customers. Witness the burp incurred in the earnings rise of a couple of minicomputer companies during some 1980 periods.

Among the steps vendors are taking to face the issue of how to make a profit with products sporting smaller tickets:

- Support
  + Remote diagnostics
  + Systems engineering by telephone

- Distribution
  + Retail stores -- either exclusive to a company -- DEC, IBM -- or department store approach -- Xerox.
  + Phone orders -- IBM's 3101 terminal
  + Trial period -- IBM's 3101 and color graphics terminal
  + Deciding whether to use distributors or to sell directly to retailers -- Apple and Commodore have both changed their plans during the year; a messy procedure at best.

Communications in picosecond

- Courtroom activity: MCI won an antitrust trial vs. Ma Bell claiming deprivation of access to local loops. An appeal is underway. Ma Bell and the U.S. Justice department were scheduled to go head-to-head in court starting Jan. 15. Any bets the trial will be short-lived?

- Bell is thinking up some pretty fancy phone offerings, along the lines of call-forwarding only more complex. And it is determined to give Cable TV a run for its money in additional home services such as security monitoring, fire alarms and energy conservation. Although many have forgotten about the panacea called Advanced Communications Service (ACS), that too may eventually emerge.

- The term local network is a hot button. Fiber optics shares the glamor with such mundane items as coaxial cable. However, there is coax and coax . . . and broadband coax functions as a captive broadcast spectrum, allowing simultaneous multiple uses. For local nets, there are two schemes awaiting approval from the IEEE -- token passing and the Ethernet-type of collision-avoidance. Given the industry's past successes at initiating standards in advance, probably both techniques will evolve. One IDCer sorts out the various communications types by geographical proximity: building or campus, wherein one doesn't have to link to a carrier; metropolitan area; and intercity.

Reproduction forbidden. Additional copies airmailed same day, $20 each; single copies to non-subsribers, $40. Call **617/890-3700.**

HP, HONEYWELL LET LOOSE SUPERMINI BARRAGE

Hewlett-Packard and Honeywell let fly with improved price-performance superminis oriented to DDP and their opening salvos at the office automation market. Honeywell featured a 32-bit machine, while HP stuck to its traditional 16-bit architecture.

HP gets the prize for changing the price-performance ratios -- the 3000 Series 44 offers up to 100% more throughput capability than the previous top of the line, the 3000 Series III, at a mere 5% increase in price. Thus the 44 is HP's strongest weapon in its arsenal for the distributed data processing market. The 44's base price is $109,445 for 1 Mbyte, four terminal ports, console, 50 Mbyte disk and 1,600 bit/in tape drive. Maximum memory is 4 Mbytes and disk storage 1.9 Gbytes, double the limits on the III. The processor speed was increased and the multi-programming executive was improved, HP said, and will ultimately be available on older processors.

The system is software-compatible with the rest of the 3000s. Older 3000s may be upgraded by swapping CPUs. The new 44 does not use the silicon on sapphire chip fabrication technology of the other CPUs; HP indicated the SOS will be used where low power consumption is a priority. Upgrades for the Series 44 start at less than $45K after a credit for the return of a maximum memory Series 33 processor. HP estimates deliveries at 16 weeks, with upgrade deliveries somewhat longer.

Illustrative of the confidence HP has in the CPU is its offer of 99% hardware uptime moneyback maintenance agreement. The Guaranteed Uptime Service, based on 24 hour/day, 7 day/week coverage, applies to the main processor and memory and up to two disks installed within 100 miles of an HP Primary-Service-Responsible Office. The 44 includes a separate maintenance processor and offers remote diagnostics. There's an additional fee for the money-back uptime agreement; 8.4% of list price vs 7.1% without guaranteed uptime. Normal 13/hour day, five day/week coverage costs 5.1% of total list price.

HP also is carrying a Diablo-made daisy-wheel printer to supplement its Text and Document Processing software for its 3000s.

Although aimed now at the DP arena, HP's laser-based printing system, the HP 2680, conceivably could find its way into an office environment. Marketed as a printer for DDP systems, the device uses z-fold paper and requires linkage with a 3000, but does not now accept the Series III because it doesn't use the HPIB interface. HP says the 2680 takes little CPU overhead and estimates the smallest 3000 could handle a printer with 20% or less of its resources. Printing speed is 45 page/min.

Although relatively slow and expensive, true to HP's talents the device has more graphics input capability than others on the market, such as Xerox's 9700 and IBM's 6670. The device features 32 character sets and electronic forms; fonts can be 22 char/in. or large and bold. Included in the $121,000 price tag are the Interactive Design System software and the Interactive Formatting System software, but the associated graphics terminal is not. The IDS defines and modifies character sets, logos and special symbols and creates forms. An HP 9874A digitizer can be used. The IFS can merge multiple parts of an electronic form, thus replacing expensive multi-part forms, HP said. Expect HP to use its graphics talents in other office automation areas too.

Reproduction forbidden. Additional copies airmailed same day, $20 each; single copies to non-subsribers, $40. Call **617/890-3700.**

HIS -- Level 6

HIS introduced a line of 10 CPUs, including two 32-bit models, as packaged small systems rather than minis. The line offers 100% more power than the Level 6s at 20% more cost. Basically HIS will continue to offer the Level 6 mini for the OEM and is packaging the revamped CPU alias DPS into small systems; all but the 6/3X are upgradable to 32-bit systems. The DPS 6 line runs from $30K to over $500K.

The systems run under Gcos 6 so are software compatible with the Level 6. Gcos 6 Mod 400 has a new release 2.1 that includes checkpoint restart, a multi key index facility, record locking and buffer pooling. License costs $4,500 with annual support of $2,500. The instruction sets for the Level 6 47 and 57 are the same as those used on the DPS 6/30 through DPS 6/76.

A noteworthy feature: Cobol is immediately available on the 32-bit CPUs, unlike DEC and DG, where the business user was served after the scientific community. For the 32-bit systems, HIS claims the highest Cobol throughput of any system in their price ranges.

The DPS 6/92 competes with the Vax 11/780, HIS indicated. Throughput on the bus was expanded from 6.5 Mbyte/sec to 13 Mbyte/sec. The 16-bit bus was extended to 32 bit and another 16-bit register was added. There are two slave processors to execute commercial and scientific instructions; the main CPU fetches the next instruction. The CPU is bit slice with other micros scattered throughout. The 32-bit CPUs have 64K RAM with cycling to control alpha particle contamination. There's single bit error correction and double bit detection. Although the boards can accept either 64K or 16K, the system's memory must be homogenous. HIS anticipates putting 64K in the smaller machines later.

DPS 6
(Copyright 1981 - International Data Corporation)

DPS	Typical Systems Price	Power x	Level 6	Max. Mem.	32-bit Upgradable	Additional Features
6/96	$461,800	200% Cobol, Fortran	6/57	16 M		slaves, FP, cache
6/94		"	"	6 M (a machine to upgrade to)		"
6/92	$223,400	"	"	4 M		cache, slaves, FP
6/76	$174,300	30%-100%	6/47	2 M	yes	cache, slaves, FP
6/74	$134,300	"	6/43	1 M	yes	cache, slaves, FP
6/54	$72,700	30% - 50% 20% - 100% Cobol	6/43	1 M	yes	slaves, FP
6/48	$72,200	30% - 100%	6/33	1 M	yes	FP
6/38	$44,500	100%	6/23	768K	no	
6/30-34	$28,800-$32,800	100%	6/23	256K	no	

Reproduction forbidden. Additional copies airmailed same day, $20 each; single copies to non-subsribers, $40. Call **617/890-3700.**

All but the low end 6/30, 32, 34 and 38 are field upgradeable to 32-bit systems, HIS said. And the Level 6 devices can obtain the function level of the high-end 32 bit systems, HIS indicated.

In terms of power, the DPS 6 line overlaps the 62 and 64 lines, but HIS sees them sold for different applications. Some examples of configurations and prices: a 6/30 with 128K, 10 Mbyte disk, 160 char./sec printer, two CRTs, $28,800. A DPS 6/92 with cache, scientific and commercial processors, 1 Mbyte, 64 communications lines, two disks, console, 600 line/min printer, $223,400.

HIS Plans

HIS indicated it plans to market the DPS 6 aggressively and more selectively in order to improve its product margins to that of the rest of the industry. James Pompa, vice-president and general manager of Honeywell's Small Systems and Terminals Division, indicates he hopes to get R&D expenses down to under 10% of revenues. (The reason HIS' figure is high relative to the rest of the industry is its late "reentry" into the mini business.)

HIS plans to satisfy large and medium size customers with leading edge needs. There will be more of a focus on specific industries worldwide, such as manufacturing and airlines, and others such as finance, health, distribution, and government, in specific countries.

Why the package? EDP/IR got the feeling HIS views systems packaging as perhaps a more economical route rather than carrying a zillion parts as required for the mini (OEM) business. However, HIS stressed it will continue to provide Level 6.

The Level 6 has been a real boon to HIS, emphasizing its thrust in DDP. HIS President Steve Jerritts indicated that in some cases installations of Level 6s helped sell larger systems. Primarily, however, it's the availability of Level 6 as part of a DDP system that helps sway users who want to put new applications up on medium or large size DPS hosts with distributed minis.

HIS indicated it has shipped 10,000 Level 6s with the average system value about $80K. The value of OEM shipments is around 15% and should increase in the next few years; an additional 8% to 10% is used internally. To facilitate component sales, HIS is starting Wats line sales of memory boards and other parts in addition to providing stock in a computer store.

Office Systems

HIS is attempting to take the top-down approach to office automation, with the emphasis on compatible file structure among word processing and DP software. There are two offerings, based on the Level 6/DPS 6 hardware. The WP 6 software, $5,000 with annual support charge of $1,350, integrates WP and DP and provides communications. It runs under GCOS 6 Mod 200 and 400 and goes on DPS 6 or on Level 6/43 and above.

The Administrative System runs only on DPS systems and is a communicating shared resource system with WP and document distribution capability. Administrative System 4 on the 6/30 and 32 with up to four workstations costs $3,000; the 16 runs on the 6/38 and 48 and handles 16 workstations for $5,500. Annual support charges are $810 and $1,485, respectively.

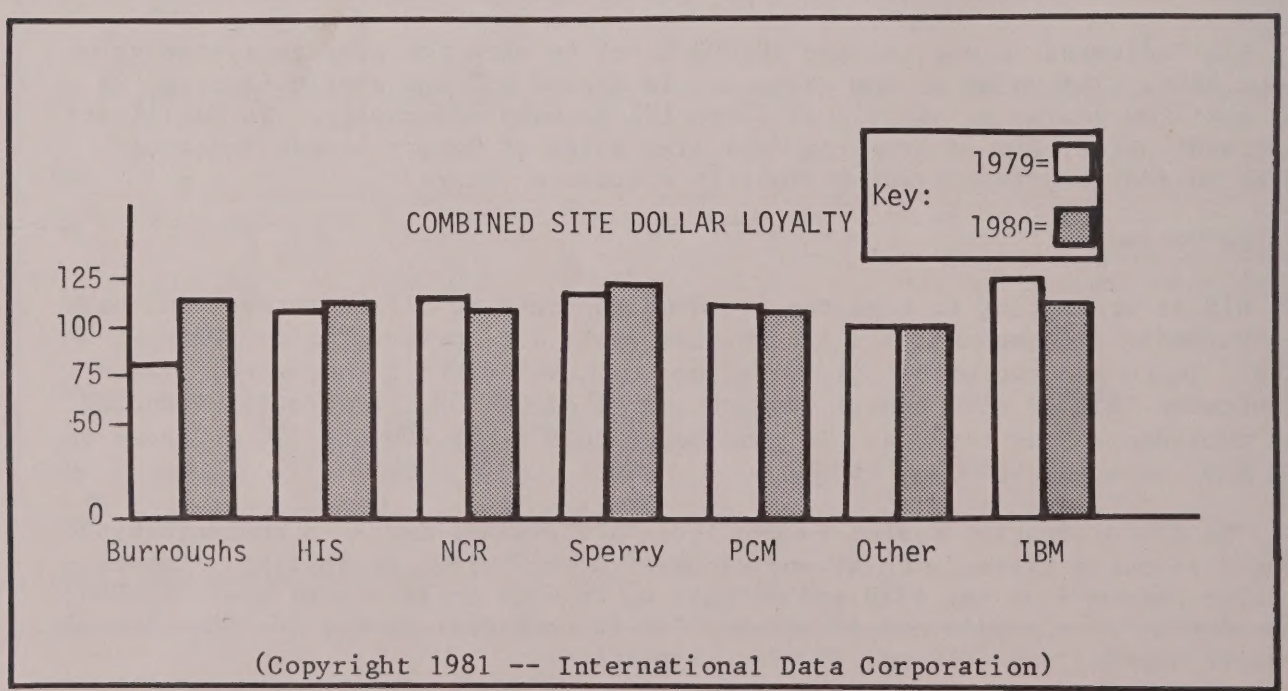
Reproduction forbidden. Additional copies airmailed same day, $20 each; single copies to non-subsribers, $40. Call **617/890-3700.**

• IBM ENDS YEAR WITH PRICE HIKE -- just as it did in 1979. Looks like the hikes will come every six months like clockwork -- December 29 in both 1979 and 1980 and June 27 in 1980. GSD and DPD generally levied hikes of 8% on lease and rental effective April 1 and up to 5% on purchase effective immediately. The result is encouragement of purchase. Maintenance charges are going up 15% and field engineering rates about 10%. Software and education products are raised as much as 15%. Various new products exempted from purchase and lease hikes include the 3033S and 3081 and other assorted items such as the 3420 drive and some printers. And the 4300s and 8100s as well as GSD products such as the S/34, S/38, displays and the 5520 administrative system were spared purchase hikes this time around. Through some tweaking, IBM indicated it would like to have its 3350s on lease converted to purchase. The 3350 rental and lease went up 9.4% but purchase and maintenance remained the same. However, the 3420 drive, exempted from purchase and lease hikes, incurred an 8.7% rise on maintenance, which is applied only to purchased units.

Interestingly, in mid December IBM lowered the price of its top of the line S/1, the 4955E, by 24% to clear the decks for a new model, presumably.

• DEC DID TOO . . . accompanied by Memorex. With the exception of the VAX 11/780 and newer 750 and the Decsystem 2020, DEC raised prices on most packaged systems, peripherals, software and services by 4% to 6%, with the older products garnering even higher increases. DEC's raise was also its second during 1980. Memorex upped lease and rental prices on its disk systems by 7% effective immediately and raised maintenance prices as of April 1 on tape systems 10%, following IBM's lead.

• BURROUGHS IMPROVED DOLLAR LOYALTY ranking in 1980, according to a preliminary cut of IDC data. As the graph below shows, Burroughs turned its combined site dollar loyalty figure from its all-time recent low in 1979 of .79 to a most respectable 1.10 during 1980; see EDP/IR Dec. 29, 1980.



(Copyright 1981 -- International Data Corporation)

Reproduction forbidden. Additional copies airmailed same day, $20 each; single copies to non-subsribers, $40. Call **617/890-3700.**

EDP industry report

• THE INTERNATIONAL DATA CORPORATION'S NEWSLETTER FOR EXECUTIVES CONCERNED WITH THE ELECTRONIC DATA PROCESSING INDUSTRY

"THE GRAY SHEET" JUNE 9, 1980 • VOL.16,NO.1 P.J.McGOVERN,PUBLISHER

IBM UNLEASHES 4331 WITH -2; IDC'S ORDER FORECAST FOR SERIES CHANGES LITTLE

Sometimes IBM's marketing schemes are behind the times. Witness the concept of upgradable CPUs, finally endorsed by IBM with the 4331 Group 2. Although many of the minicomputer makers and plug compatible manufacturers have been heartily endorsing the field-upgradable concept, IBM generally scorned this approach and insisted on shipping different machines, complete with different numbers on the cabinet.

The question is: does the 4331-2 signal IBM's endorsement of the upgradable CPU or is it somewhat of an aberration, as was the 158-3? EDP/IR suspects that we will see more of the field-upgradable, building block approach from the Giant, as well as from other vendors. But we still don't seem to be in the age of the nameplate generation, as envisaged by EDP/IR some 10 years ago (May 18, 1970) in a description of fourth generation:

> "It will be upon you when your computer salesman shows you a catalog from which you can pick 'two of these processors, five of those elements, this combination of peripheral equipment, and that arrangement of communication components.' And when the system is delivered, it will simply have a manufacturer's nameplate . . . no number."

However, this day is fast approaching, and the harbingers are likely to be the microprocessor vendors rather than the mainframers. Witness Intel's co-processors for its 8086 in the form of a floating point math processor and an input/output processor. But Intel has even bigger plans. "Coming from Intel in the early 1980s will be three new microprocessor families. . . .The most advanced family will be based on a 32-bit 'micromainframe' processor. It will be programmed only in an efficient 'high level' language, and will contain an array of sophisticated features to simplify greatly both operating system and applications software."

With the 4331-2, users can upgrade to a CPU that offers twice the power, at twice the price. The upgrade eliminates most of the restrictions inherent in the -1. Users of the -2 can have up to 4 Mbytes main memory; use their 3330 disks; use other tape drives besides the 8809 which doesn't seem to have won any popularity contests; and generally be sure that the system can walk and chew gum at the same time.

EDP Industry Report is published in annual volumes of twenty-four issues each by International Data Corporation, Post Office Box 915, 214 Third Avenue, Waltham, MA 02254. Entire contents © 1980 by International Data Corporation. **Director,** James Peacock; **Editor,** Molly Upton; **Census Editors,** Paul Arabasz, Lloyd Cohen; **Contributing Editors,** Dave Dillman, John Gantz, Peggy Eisen, Nancy Scull, Carol Weiszmann; **Circulation Manager,** Mary M. Trayte. Patrick J. McGovern, Chairman, International Data Group, John P. Breyer, President, International Data Corporation. Editorial ideas and information are researched and formulated by the editorial staff. Information and opinions in each issue are based on the best information available, but their accuracy and completeness cannot be guaranteed. **Subscriptions:** One year, $195; three years, $475. Single copies priced as indicated on inside pages. Prices for multiple copies on request. Reproduction without written permission is completely forbidden. Telex 92-3401; Telephone **617/890-3700.**

4300S RERANKED

Model	Main Memory (MB)	IDC Performance Rating	Purchase Price (000)	Performance/ Price	MIPS	$K/ MIP
370/148	1-2	24	$438	55	.4	1,095
4331-1	0.5-1	9.6	$ 75	128	.18	416
4331-2	1-4	19.6	$ 160	122.5	.35	457
4341	2-4	34	$ 270	126	.7	385
"4341-2"		55	$ 450	122	1.2	375
3031	2-6	54	$ 800	68	1.1	727
3032	2-6	124	$1,640	76	3.0	547
3033N	4-8	192	$2,000	96	3.9	512
3033	4-16	223	$3,000	74	4.5	666
Bridge/H1		380	$3,800	100	7.7	494

IDC reassigned lower performance ratings to the 4331 and 4341, knocking the 4331-1 from 11 to 9.6 and the 4341 from 37 to 34. Now the price/performance ratios of the two systems are more similar.

Some of the more significant features of various 4300s:

	4331	4331-2	4341
Cache	0	8K	8K
Reloadable Control Store	64K, 128K	128K	Varies
Memory	512K - 1M	1M - 4M	2M - 4M
Fast Block Mux	0	1 (1.86 Mbyte/sec)	2 (2 Mbyte/sec)
3880	No	Yes	Yes
33XX	No	Yes	Yes
Optional Block Mux	1 (.5 Mbyte/sec)	2 (1.25 Mbyte/sec)	3 (2 at 2 Mbyte/sec)
Optional DASD Adapter	1	2	0

It seems that IBM has decided the system does indeed consume resources, and thus has deleted the optional reloadable control storage and made mandatory 128K. In addition, another 12 Kbytes of read only control storage helps reduce the main memory space consumed by microcode. Not surprisingly, the 4331-2 has an 8K cache -- buffer in IBM lingo -- (as do many superminis) and more use of caches can be expected in future IBM offerings.

The big news comes with the high-speed block mux and its range of peripherals, including the 33XX drives and the 3880 controller, previously unavail-

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

able on the 4331. In addition, there is a string switch capability that allows sharing of 3340 Model A2 and/or 3370 Model A1 and other drives with another IBM CPU or controller. But string switching is limited to the static assignment of a shared string to one processor at a time. These features make the 4331-2 more acceptable in a multiple CPU shop.

There are, however, some idiosyncracies with the high speed block mux channel:

- Mutually exclusive with the 8809 Mag tape adapter.
- Mutually exclusive with additional Dasd adapter.
- 231X devices must be attached to the high-speed block mux channel and cannot be used on the block mux channel.

A notable feature of the 4331 was the integration of controllers. A notable feature of the 4331-2 is the departure from integrated controllers, which should be good news to peripherals makers.

Fate of orders?

Although IDC expects the 4331-2 to be a relatively successful machine, the -2 probably won't have much impact on the composite picture of predicted 4300 installations. In large part, the 4331-2 will trim the fluff out of the remaining order picture, walking off with some orders that when placed were nothing more than wishful thinking or ink on paper. IDC expects the -2 to garner orders from both on-order 4341s as well as 4331s. New orders should come from the 370/125 base, which was relatively unenthralled by the 4331 and 4341. IBM might wind up with a little more revenue than perhaps initially booked -- about $250 million to $300 million or only about 1% to 1.5% of corporate revenues. The fact is, the -2 looks like a move to close the gap through which the PCMs were beginning to walk. Here's IDC's estimate of 4331 shipments prior to the 4331-2 announcement:

	1979	1980	1981
U.S.	350	1400	1800
International	400	2600	2300
	750	4000	4100

One of the problems with the plain vanilla original 4331 was that although IBM portrayed it as quite a small machine, users thought otherwise and tried to make it behave like a sizable 370. Users who relied on IBM to upgrade the 4331 are jumping for joy as they figure they have saved a hefty piece of change by not getting the 4341. For even with the upgrade, a 4331-2 is still less expensive.

IBM also revamped its lease/purchase ratio, making the system attractive to purchase. An IDC survey prior to the Group 2 announcement of 55 sites with 4300s on order found 67% plan to lease from IBM. Of the total installed base, 64% of the 4331 U.S. base is on rental or lease while internationally 83% of the base is on rental or lease.

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

4300 CPU PRICES

Processor	Memory	Purchase	MMC	2 Year Lease	Lease/ Purchase
4331-1	.5	$ 68,250	$157	$1,695	
	1.0	76,100	168	1,895	40
4331-2	1.0	150,000	230	4,285	35
	2.0	165,700	250	4,685	35
	3.0	181,400	270	5,085	35
	4.0	197,100	290	5,485	36
4341	2.0	257,250	498	6,390	40
	4.0	288,650	540	7,190	40

Breaking tradition, IBM will begin offering field upgrades prior to first shipment of the 4331-2. Upgrades start in the third quarter, while shipments are scheduled for the fourth quarter.

UNIVAC IS LISTENING; SYSTEM 80 FIRST OF FRIENDLY FAMILY

System 80, a small general purpose computer from Univac, seems to epitomize the Sperry Rand ad campaign emphasizing the importance of listening. It looks like a friendly system, and Univac spent quite some time showing how non-DP oriented managers can use a menu approach to access files even when there is no one around to instruct them. The 80 is field upgradable from Model 3 to Model 5, which offers 56% improvement in performance, thanks to a faster control store. Enhancements to OS/3, available to current small Series 90 users, were also announced.

The target market for the 80, which is the first in a new family, is the IBM base of potential 38 users, especially the System/3 base, as well as some considering the 4331. Conversion aids from the System/3 abound. In addition, the 80 is the intended upgrade path for Univac's numerous 9200, 9300, 9400 and 9480 and BC/7 systems. According to preliminary results of an IDC study, a substantial percentage of this aging Univac base has been migrating elsewhere.

Univac couldn't resist adding the pitch that the 80 is "here now, unlike the 38 which has been around a long time but isn't really here." (However, the 38 is due for delivery in July; the 80 in December.) The 80 is "not a me too system, rushed to fruition in response to others' products," Univac said.

Univac says about 65% of its Series 90 business represented new Univac accounts and it expects an even greater percentage of System 80 business to be new accounts. And about 50% of its customers should come from the manufacturing and distribution sectors. Univac said it will have a version of its Unis software for manufacturing, as well as an application for distributors, called Unidis, spearheading its industry-oriented sales approach. In addition, there will be packages for the education, government, medical and transportation industries.

The system embodies many current concepts in design architecture: emitter coupled logic circuits; multiple (18) microprocessors; multiple (three) busses;

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

and the ability to handle both batch and interactive jobs. But rather than stress solely technological aspects, Univac also emphasized ease of use.

For instance software available includes a Screen Format Generator, a Dialogue Processor Specification Language; interactive Job Control Language, and an Information Management System that includes a Query type language called Unique and a data base management system that supports multi-file data base organization and multiple user access to the same data. One of the languages, Escort, is an English-like language that permits creation of a program with only one statement.

Univac's view of System 80 vs IBM's 38

Among the competitive advantages Univac is touting for its system vs IBM's System/38 are: time-tested software -- OS/3 of which Univac has about 2,700 users with its 90/25, 30 and 40; and a complete set of languages -- RPG, Cobol, Basic, Fortran, Assembly and Escort. System/38 offers RPG. The 80 also offers features that promote compatibility with System/3.

Univac also boasts of disk storage flexibility -- the System 80-3 can handle the maximum disk capacity; both removable and non removable disks are available. The 80 also has a fixed head option for the non removable disk. And four diskette servos provide concurrent I/O.

The System 80 can handle up to 10 line printers; the 38's limit is two. The Univac can handle eight communications lines vs four on the 38.

The central processor can be upgraded through the addition of an Input/Output Microprocessor (IOMP) that supports the addition of three peripheral controllers and six additional communications lines. Processor performance can be increased by 55% through a High Performance Control Storage.

The System 80 has a microprocessor-controlled disk channel that directly accesses main storage and supports up to eight disks. Other peripheral controls interface to main storage via the central microprocessor or the IOMP.

The minimum configuration consists of a CPU with 256K, control units and 118 Mbyte disk, console, diskette and printer. The maximum system has 1 Mbyte main memory, 40 workstations, eight tapes, multiple printers and card units, eight communications lines and 946 Mbytes disk. There's also the High Performance Control Storage booster.

DIFFERENT PATHS TO EASE OF USE

IBM took the new approach, integrating a relational data base management system into the System/38 along with a new operating system. The result, a delay in product shipment and an increase, prior to shipment, in the maximum main memory to 2M bytes. Univac, on the other hand, took its tried and true OS/3 and added to it lots of features that make the system easier to use, such as Escort language, screen formatting, and dialogue specification. Both systems embody fairly fast hardware -- for instance, control storage instruction cycle time on the faster System 80 is 180 nsec while on the faster System/38 it is 200 nsec. Univac's processor speed looks faster, but that may be to compensate for possible overhead inherent in the operating system's acquisition of many new features.

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

CPU PRICES -- UNIVAC VS IBM VS IBM

Processor	Memory	Purchase	Maintenance	Lease	Term (Years)
Univac 80-3	512K	$ 62,607	$384	$1,322	5
	1.0	85,891	442	1,826	5
IBM 38-3	.5	70,210	341	1,750	3
	1.0	80,210	383	2,030	3
IBM 4331-1	.5	68,250	157	1,695	2
	1.0	76,100	168	1,895	2
Univac 80-5	.5	83,933	432	1,700	5
	1.0	95,564	490	1,952	5
IBM 38-5	.5	99,645	400	2,445	3
	1.0	113,645	458	2,845	3
IBM 4331-2	1.0	150,000	230	4,285	2

The Univac systems include a 118 Mbyte disk, a diskette, printer, controllers and console, and the operating system. A package of extended system software such as screen formatting, utilities, sorts, and Dialogue Specification language costs $147/mo. Monthly leases on software: Escort, $42; RPG, $53; Fortran, $84; Basic and Cobol each $74.

The IBM System/38 includes a 64.5 Mbyte disk, diskette, console and controllers. The operating system costs $400/mo; utilities, $30/mo; and RPG-3, $60. The IBM 4300s are bare bones CPU, memory, and power supply.

NATIONAL COMPUTER CONFERENCE (NCC) ATTENDEES GATHER IN FORCE; 80,000 THRONG EXHIBITS STRONG IN OFFICE AND OUTPUT CAPABILITIES

If the NCC Office Automation Conference in Atlanta this spring was less than overrun, this year's NCC, heavy in office emphasis, made up for it. Paying attendees (about 20% of the total), exhibitors and their guests trooped around six exhibit halls and to over 90 technical sessions . . . clustering around all manner of new printers, business graphics devices, DDP and WP terminals, and small business systems.

(For the moment, at least, the recession was in abeyance. Salesmen queried by EDP/IR said, no, business is good, these NCC leads are no less qualified than usual. Their bosses though, took a more cautious tone . . . hinting at contingency plans for order stretchouts and verbally crossing their fingers against layoffs.) But in all it was the usual brisk NCC. Placed at the bottom ledge of the decade, its tone and substance portend the changes ahead. Trends evident:

- Personal computers, or desktops in EDP/IR parlance, are coming. The exhibits, marooned away from the convention center, were mobbed. Apple Computer rented Disneyland for a night -- illustrating the fledgling industry has the flare and bucks to call itself a member of the establishment.

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

- Color is coming. Users are beginning to perceive the benefits in color displays and printouts -- as managers and professionals look for ways to combat information overload. IBM's new color display terminal, the 3279, was the hit of that booth for instance. Applications are migrating from process control and engineering design to office and general business use.

- The Japanese are coming. With a decent foothold in the OEM segment, Japanese firms are starting to lure end users. NEC had a new small business system; Fujitsu and Panasonic (Matsushita) new terminals. They're also beginning to make a stir in the desktop computer market. More ominous: no less than David Packard himself, chairman of Hewlett-Packard, admitted that HP was switching to some Japanese components -- not because they were a little better than U.S. parts, but a lot better.

- Office Automation is here. At least the vendors think so. Printers, impact and nonimpact, abounded; word processing systems and software were in high profile, hybrid DP/WP systems are heading into their second generation; local networking schemes were hot.

Perhaps in deference to the economic ash in the environment, this year's NCC seemed more serious, more in earnest, than in the past. There were the usual leggy models, but no belly dancers with computers in their navels. Magic shows were few in number. Company-sponsored parties (except for Apple's Disneyland treat) were not particularly flamboyant.

The message? The bedrock trends of the industry toward the office and the home are exciting enough. No need for distraction. Besides, there's a recession out there somewhere. Isn't there?

NCC: showcase for new products

NCC is the Cape Canaveral of new product launchings. This year was no exception . . . although there was nothing with the significance, say, of a new computer from IBM. But Honeywell did show off one of its DPS 8s, Nanodata reintroduced a plug-compatible 370, and Zilog announced Z-Net, a coaxial cable competitor to Xerox's ethernet.

With apologies in advance to all the vendors who introduced products not mentioned below, EDP/IR points out some of the highlights:

Minicomputers. Harris introduced a new $75,000 entry level machine, the 80, that comes, all in one cabinet, with the Vulcan software and an 80 MB Winchester-type disk. Texas Instruments came out with a new 990 CPU module that it says will outperform its predecessor 990 single-board computers by a factor of 3.5. The company also introduced a new industrial control 990 module and a new speech synthesis processor. Intel introduced a new single-chip microcomputer family, the 8051.

Small Systems. NEC unveiled its least expensive Astra Series small business computer, the Model 205, which supports Cobol, Basic and a macro-assembler language. With 128K bytes, the typical system costs $13,310. In addition, a text processing package, Astra Write, is available for the full line of Astras. Mini-Computer Systems also announced an entry level system,

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

In lieu of EDP Industry Newsfront, and in honor of the hubbub at the industry annual rites of spring, here's a continuation of news at NCC.

the Micos 45, a 64 KB system listed at $17,000 and to be distributed through office product dealers. Targeting the OEM small business mart, DG has packaged a system with the RDOS operating system and Basic. The system, dubbed CB/50, can also have Fortran, and starts at $27K for three terminals, 64K bytes, 12.5M disk, a diskette and printer. Apple announced the Apple III, a 128 KB system that comes with two optional software packages, one for "Information Analysis," the other for word processing. Apple III prices range from $4,340 to $7,800. Nixdorf enhanced its 8870/1 small business computer, the 8870/3, and Qantel gave its 110 and 120 computers multiterminal capability.

NCR, after doubling its 8100 base last year, announced the I-8140 desktop, which with 64K and a matrix printer and diskette, sells for $15,225 or $588/mo. The system supports Cobol and Basic and applications written for other 8100s. It also emulates the NCR 299 accounting system, of which NCR has installed over 26,000 worldwide. To make its 8000s, including the 8140, easier to use, NCR offers NCR-Ask, an English-like Query language.

Small computer software. Tandem announced a distributed data management package, Encompass, for its system users; Encompass is designed to help online applications development and provide distributed data base control. Apple gave its users "Apple Fortran," and General Automation introduced "NoCode," which the company says eliminates the coding phase of programming. NoCode is self documenting and permits applications to be implemented by inputting CRT screen layouts and file definitions.

Office automation. Anderson Jacobson announced the AJ-410 electronic mailbox, a micro-based terminal also suitable for RJE; AM Jacquard revealed four new software packages for its J425 WP, including a sort that permits record processing on the WP and a communications interface that lets the WP talk to the company's "J" computers. Basic Four, which has provided WP capability on its larger computers, lowered the price of Dataword II software and also made it available on all its computers, not just the System 410, for which it was announced. And Four-Phase brought out its OMS/IV office management system for integrated word/data processing that features an executive services package and electronic document processing.

(Noticeable by its absence: AM International's new high-speed communicating copier developed for Satellite Business Systems and demonstrated just the week before NCC.)

Terminals. The Harris booth was popular as users got their first glimpse of the 9200 terminal system; the 9210 is compatible with the 3270, while the 9220 also supports multiple hosts in BSC and SDLC environments. A basic 9200 system will cost about $23,000. C. Itoh announced an OEM plug-compatible DEC VT 100, Televideo and Hazeltine both unveiled smart CRT terminals, while Lear Siegler announced a new dumb CRT that has more features than the plain ADM. Panasonic uncorked a family of 10 CRTs, including four color models, while Fujitsu introduced a new 3270-compatible family. GE, meanwhile, demonstrated a new magnetic nonimpact printing technology (8000 lpm) as part of its TermiNet line. GE stressed the technology is not yet in production.

Reproduction forbidden. Additional copies airmailed same day, $6 each; single copies to non-subcribers, $10. Call **617/890-3700.**

elbe
FALL RIVER, MASS.
No. 13208